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PHILIPS 140S LCD SERVICE MANUAL

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14" LCD Colour Monitor 140S LCD

Service
Service
Service

DDC/Power saving /TCO
User-friendliness Control

140S1M/00

Service Manual

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Horizontal frequencies
30 - 61kHz

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SAFETY NOTICE

ANY PERSON ATTEMPTING TO SERVICE THIS CHASSIS MUST FAMILIARIZE HIMSELF WITH THE CHASSIS AND BE AWARE OF THE NECESSARY SAFETY PRECAUTIONS TO BE USED WHEN SERVICING ELECTRONIC EQUIPMENT CONTAINING HIGH VOLTAGES.

CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING.

REFER TO BACK COVER FOR IMPORTANT SAFETY GUIDELINES

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Important Safety Notice

Proper service and repair is important to the safe, reliable operation of all Philips Company** Equipment. The service procedures recommended by Philips and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully Read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper Service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Philips could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Philips has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Philips must first satisfy himself thoroughly that Neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

** Hereafter throughout this manual, Philips Company will be referred to as Philips.

FOR PRODUCTS CONTAINING LASER :

DANGER- Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.

CAUTION- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

CAUTION- The use of optical instruments with this product will increase eye hazard.

TO ENSURE THE CONTINUED RELIABILITY OF THIS PRODUCT, USE ONLY ORIGINAL MANUFACTURER'S REPLACEMENT PARTS, WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THIS SERVICE MANUAL.

WARNING

Critical components having special safety characteristics are identified with a ⚠ by the Ref. No. in the parts list and enclosed within a broken line* (where several critical components are grouped in one area) along with the safety symbol ⚠ on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from Philips. Philips assumes no liability, express or implied, arising out of any unauthorized modification Of design.
Servicer assumes all liability.

*** Broken Line**

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Technical Specifications

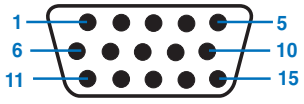
LCD Panel
Type : TFT LCD
Screen size : 14.1" visual
Pixel pitch : 0.279 x 0.279 mm
LCD Panel type : 1024 x 768 pixels
R.G.B. vertical stripe
Anti-glare prolarizer hardness
Effective viewing area : 285.7 x 214.3 mm
Display Colors : 6-bit interface

Video
Video dot rate : 80 MHz
Input impedance
- Video : 75 ohms
- Sync : 2K ohms
Input signal levels : 700m Vpp
Sync input signal : Separate sync
Composite sync
Sync polarities : Positive and negative
Input Frequency
XGA Hsync : 48-60 KHz, Vsync 60-75 Hz (N.I.)
SVGA Hsync : 35-50 KHz, Vsync 56-75 Hz (N.I.)
VGA Hsync : 31-58 Khz, Vsync 60-75 Hz (N.I.)
Video Interface : Analog (D-Sub)
Optical Characteristics
Contrast ratio : 200 (typ.)
Brightness : 200 nits (typ.)
Peak contrast angle : 6 o'clock
White Chromacity
x=0.281 y=0.311 (at 9300 K)
x=0.312 y=0.338 (at 6500 K)

Viewing Angle (C/R>10) : Upper≥15° (typ.)
Lower≥35° (typ.)
Left≥45° (typ.)
Right≥45° (typ.)
Response time : ≤50ms (typ.)

Physical Specifications
Dimension (W x H x D) : 361 x 343 x 165 mm (incl. Pedestal)
Weight : 4.2 Kg
Power supply : 100 - 240 VAC, 50/60 Hz
Power consumption : 23 W
Temperature (operating) : 0°C to 35°C
Relative humidity : 20% to 80%
System MTBF : 50K hrs (excluding LCD panel, CCFL) CCFL 50 Khrs (Panel dependant)

Pin Assignment



Pin No.	Assignment
1	Red video input
2	Green video input
3	Blue video input
4	Identical output - connected to pin 10
5	Self test
6	Red video ground
7	Green video ground
8	Blue video ground
9	No pin
10	Logic ground
11	Identical output - connected to pin 10
12	Serial data line (SDA)
13	H. Sync / H + V
14	V. Sync (VCLK for DDC)
15	Data clock line (SCL)

Preset Display Modes

Display Mode	H. Freq. (KHz)	V. Freq. (KHz)	Dot rate (MHz)	Resolution
IBM VGA 10h	31.469	70.086	25.175	640 x 350
IBM VGA 3h	31.469	70.087	28.322	720 x 400
IBM VGA 12h	31.469	59.940	25.175	640 x 480
Macintosh	35.000	67.000	30.200	640 x 480
VESA	37.861	72.809	31.500	640 x 480
VESA	37.500	75.000	31.500	640 x 480
VESA	35.156	56.250	36.000	800 x 600
VESA	37.879	60.317	40.000	800 x 600
VESA	48.077	72.188	50.000	800 x 600
VESA	46.875	75.000	49.500	800 x 600
Macintosh	49.700	75.000	57.300	832 x 624
VESA	48.363	60.004	65.000	1024 x 768
VESA	56.476	70.069	75.000	1024 x 768
VESA	60.023	75.029	78.750	1024 x 768

Automatic Power Saving

If you have VESA's DPMS compliance display card or software installed in your PC, the monitor can automatically reduce its power consumption when not in use. And if an input from a keyboard, mouse or other input device is detected, the monitor will automatically "wake up". The following table shows the power consumption and signaling of this automatic power saving feature:

Power Management Definition					
VESA's Mode	Video	H-sync	V-sync	Power Used	LED color
ON	Active	Yes	Yes	<23W	Green
Stand-by	Blanked	No	Yes	<3W	Amber
Suspend	Blanked	Yes	No	<3W	Amber
Active-OFF*	Blanked	No	No	<3W	Amber

This monitor is ENERGY STAR®-compliant. As an ENERGY STAR® Partner, PHILIPS has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

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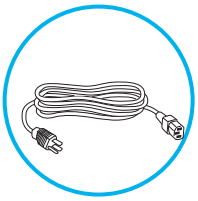
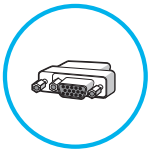
Accessories and Front View

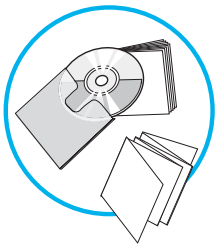
Accessory Pack



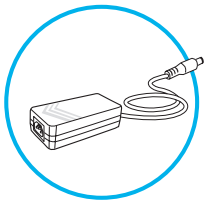
1. Power Cable (socket may differ for different countries)



2. Macintosh Adapter (optional)



3. E-DFU package with Quick Setup Guide, Using Your Monitor Manual, and CD-ROM.

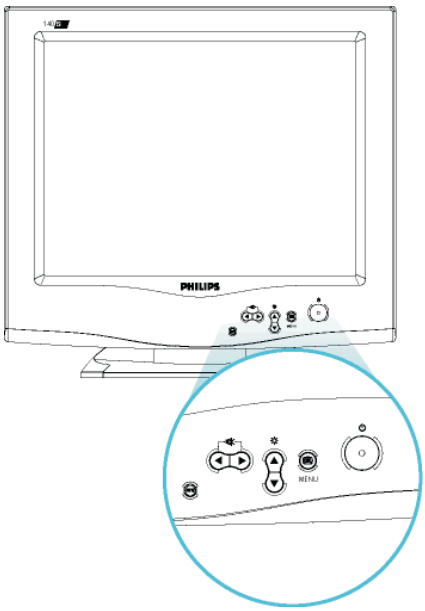


4. AC /DC Adaptor

Correct Handling of the Monitor

1. When handling the monitor, grip the bottom firmly with both hands and ensure that the front panel faces outward before lifting. Please refer to the diagram on the right.
2. Handling the monitor with care prevents scratching and damage. If the monitor becomes damaged, immediately disconnect the power from the unit and have it checked by a qualified service person before using it again.
3. To prevent fire or electrical shock, do not drop the monitor.
4. when moving the monitor, be sure to unplug all power cords in order to avoid injury or damage to the equipment.

Front View



UP and DOWN buttons are used when adjusting the OSD of your monitor

LEFT and RIGHT buttons, like the UP and DOWN buttons, are also used in adjusting the OSD of your monitor.

BRIGHTNESS hotkey. When the UP and DOWN arrow buttons are pressed, the adjustment controls for the BRIGHTNESS will show up.

OK button which when pressed will take you to the OSD controls

POWER button switches your monitor on

Automatically adjust the horizontal position, vertical position, phase and clock setting.

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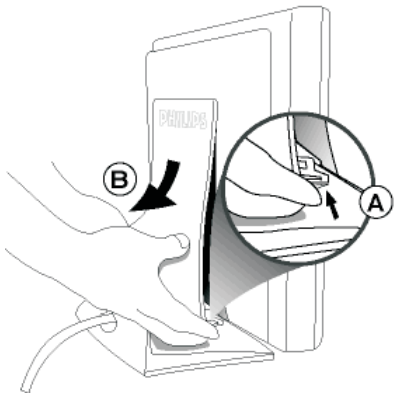
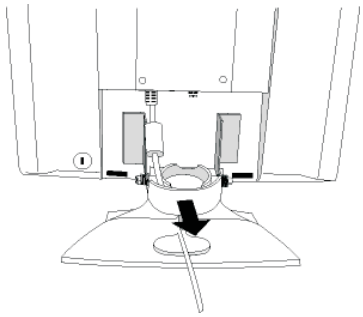
Installation

Please follow the steps below to connect your LCD Monitor to PC.

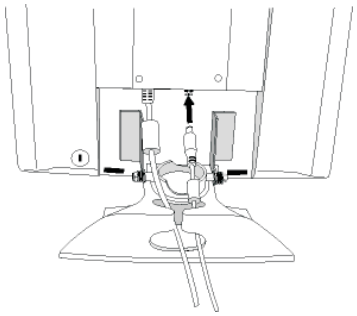
1. To remove the back cover, simple press the 2 clips on its underside, then pull out and down.



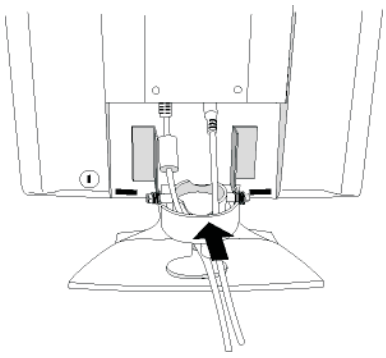
2. Remove the plastic ring from the hinge.



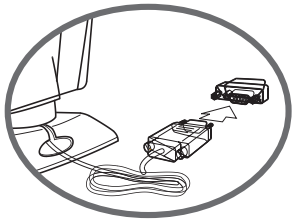
3. Plug in DC power cable into the DC connector.



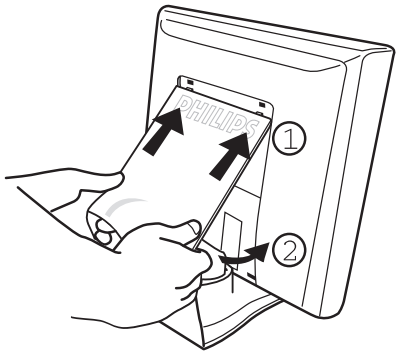
4. Cover the cables with the plastic ring and put the ring back on the hinge.



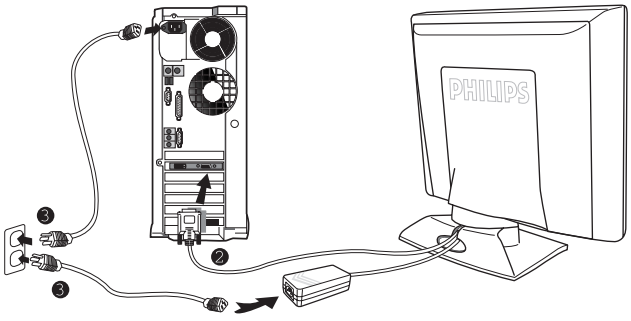
Note: If you use an Apple Macintosh™, you need to connect the special Mac adapter to one end of the monitor signal cable.



5. Replace the back cover on the monitor.



6. Connect to your PC.
6.1 Turn off your computer and unplug its power cable.
6.2 Connect the monitor signal cable to the video connector on the back of your computer.
6.3 Plug the power cord of your computer and your monitor into a nearby outlet.
6.4 Turn on your computer and monitor. If the monitor displays an image, installation is complete.



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OSD Adjustment

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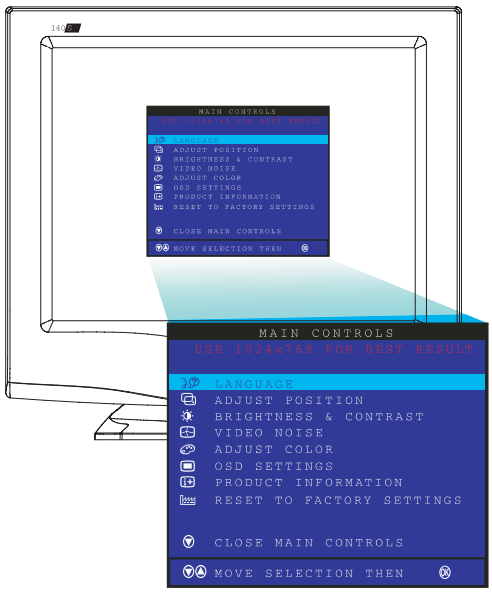
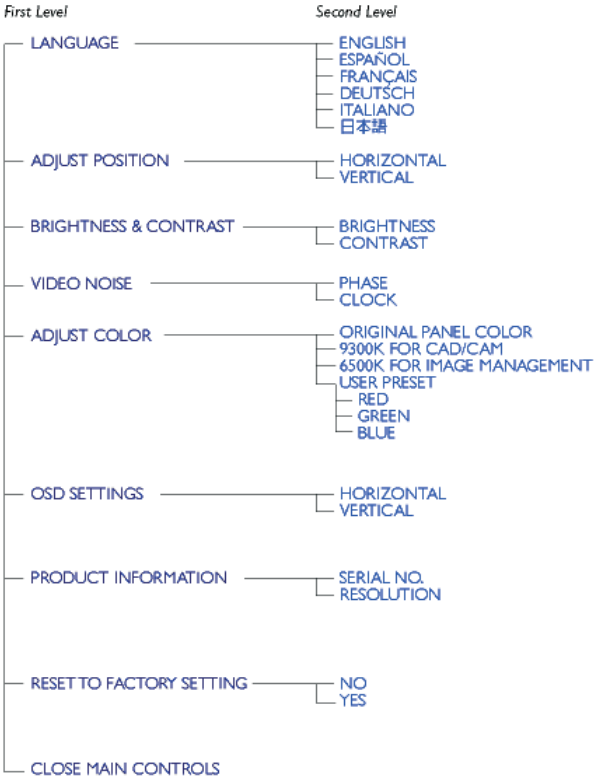
On the front controls of your monitor, once you press the OK button, the OSD Main Controls window will pop up and you can now start making adjustment to your monitor's various features. Use the ◀ ▶ or the ▲ ▼ keys to make your adjustments within.



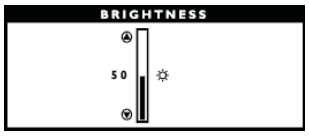
The OSD Tree

Below is an overall view of the structure of the OSD. You can use this as reference when you want to later on work your way around the different adjustments.



Brightness

1. Press the ▲ or ▼ button on the monitor. The BRIGHTNESS window appears.



2. Press the button to adjust the brightness.

3. When the brightness is adjusted to the level desired, stop pressing the ▲ or ▼ button and after three seconds the BRIGHTNESS window will disappear with the new adjustment saved.

Back Forward

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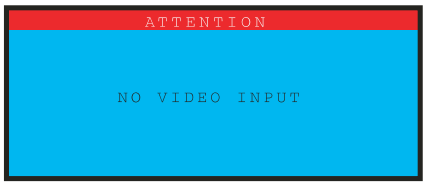
OSD Attention Signals

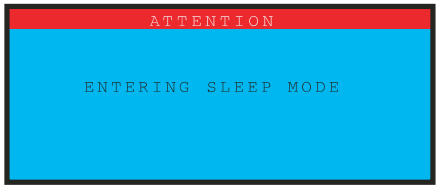
The monitor will detect various display situation automatically. When the monitor detects the problems, the screen will show the different warning signals to remind you what is happen to your monitor.

NO VIDEO INPUT
This screen appears if there is no video signal input. Please check that the signal cable is properly connected to the video card of PC. After 30 minutes the attention signal of Entering Sleep Mode will replace it automatically.

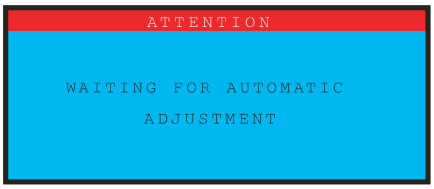


CANNOT DISPLAY THIS VIDEO MODE
This screen warns when the input frequency from the computer is not a standard video mode or out of the monitor's scanning range. Please change the display mode of the operating software in the computer (i.e. Windows) to 1024 x768 @ 60Hz for best display performance.

ENTERING SLEEP MODE
This screen appears when the monitor is about to enter the sleep mode. Please press any key on the keyboard or click the mouse to wake up the monitor and computer.



WAIT FOR AUTOMATIC ADJUSTMENT
This screen appears when you touch the AUTO button. It will disappear when the monitor is properly adjusted.

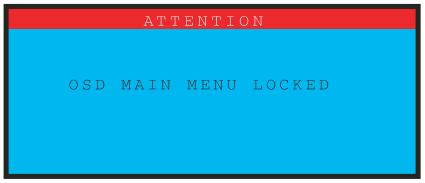


Access Service Mode

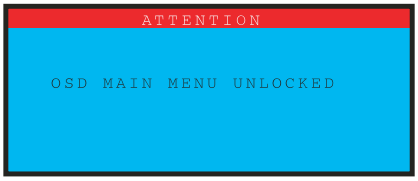
Operating monitor with no signals (power saving mode), keep pressing OK button for more than 10 seconds. Following information will appear on the screen. Leave service mode by either re-feed video signal or simply turn off and on the power of monitor.

To Lock/Unlock OSD function

The OSD function can be locked by pressing OK button for more than 10 seconds, the screen shows following windows for 3 seconds. Everytime when you press OK or AUTO button, this message appears on the screen automatically. The ▲ & ▼ (brightness) , ◀ & ▶ (mute) hotkey are still functional for brightness and mute expectively

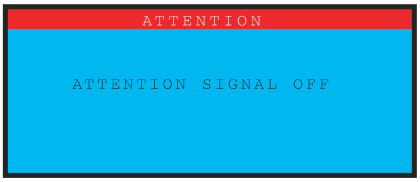


Locked OSD function can be released by pressing OK button for more than 10 seconds. While press OK button for OSD unlocked purpose, the screen will keep showing "OSD MAIN MENU LOCKED " until OSD function unlocked and screen automatically shows following window for 3 seconds.

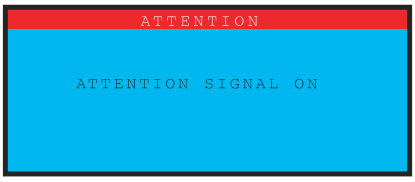


Switch ON/OFF attention signals

All attention signals can be switched off by keep pressing AUTO button for more than 10 seconds if there is no video signal supplied.



Recover attention signals by pressing AUTO button for more than 10 seconds without video signal input.



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Troubleshooting

Common Problems

Having this problem?	Check these items
No Picture (Power LED not lit)	- Make sure the Power cable is plugged to the wall and back of the monitor. - Make sure the AC/DC Adaptor has been attached to the DC Jack. - First, power button in front of the monitor should be in the OFF position, then press it to ON position again.
No Picture (Power LED is amber or yellow)	- Make sure the computer is turned on. - Make sure the signal cable is properly connected to your computer. - Check to see if the monitor cable has bent pins. - The Energy Saving feature may be activated.
Screen says 	- Make sure the monitor cable is properly connected to your computer. - Check to see if the monitor cable has bent pins. - Make sure the computer is turned on.
AUTO button not working properly	- The Auto Function is designed for use on standard Macintosh or IBM-compatible PC running Microsoft properly Windows. - It may not work properly if using non-standard PCs or video card.

Imaging Problems

Having this problem?	Check these items
Display position is incorrect	- Push the AUTO button. - Adjust the image position using the Adjust Position in OSD.
Image vibrates on the screen	- Check that the signal cable is properly connected to the graphics board or PC.
Vertical flicker appears 	- Push the AUTO button - Eliminate the vertical bars using the Clock Adjustment in the Video Noise item
Horizontal flicker appears 	- Push the AUTO button - Eliminate the horizontal bars using the Phase Adjustment in the Video Noise item
The screen is too bright or too dark	- Adjust the contrast and brightness using the OSD. (The backlight of the LCD monitor has a fixed life span. When the screen becomes dark or begins to flicker, please contact your dealer.)
An after-image appears	- If an image remains in the screen for an extended period of time, it may be imprinted in the screen and leave an after-image. This usually disappears after a few hours.
An after-image remains after the power has been turned off.	- This is characteristic of liquid crystal and is not caused by a malfunction or deterioration of the liquid crystal. The after-image will disappear after a set amount of time.
Green, red, blue, dark, and white dots remains	- The remaining dots are normal characteristic of the liquid crystal used in today's technology.

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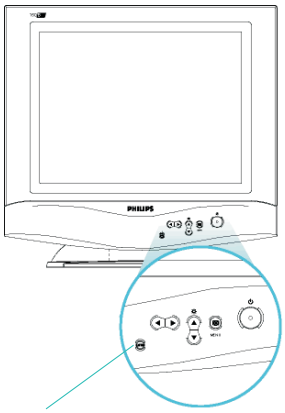
Clock & Phase Adjustments

AUTO Button



AUTO Button

Press this button for a better video display. CLOCK, PHASE, Vertical position, and Horizontal position are adjusted automatically.

Clock & Phase Adjustments

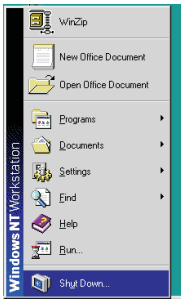
After pressing AUTO button, you may need to fine tune CLOCK and PHASE adjustment to completely eliminate the vertical and horizontal bars caused by different video signal input from the video card of PC.

CLOCK phenomenon

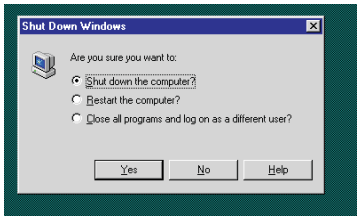
PHASE phenomenon

To fine tune CLOCK and PHASE adjustment by using OSD with Microsoft "Shut Down Windows", follow these steps:

Step 1 : Click on the Start button (Win95, Win98 or Win NT) and select " Shut Down...".

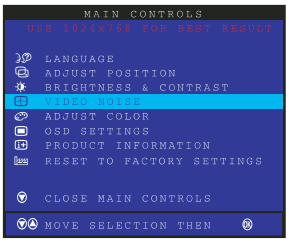


Step 2 : The "Shut Down Windows" appears.

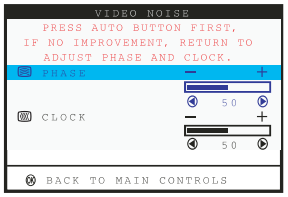


Step 3 : With the Shut Down Window still up on the screen , press the AUTO button to bring up OSD Main Control menu.

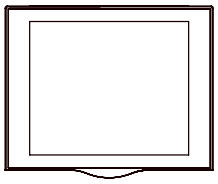
Step 4: Press the ▼ button to move the selection bar down until VIDEO NOISE is highlighted.



Step 5: Press the AUTO button. The VIDEO NOISE window appears. PHASE will be highlighted. Press ◀ or ▶ button to eliminated the vertical bars.

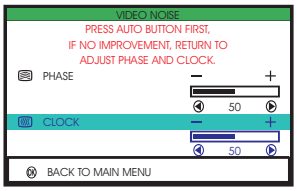


Before

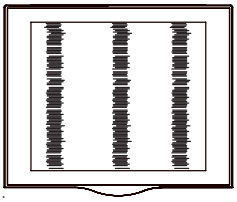


After

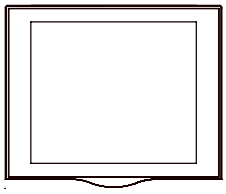
Step 6: When the PHASE is adjusted to the level desired, press the ▼ to select CLOCK.



Step 7: Press the ◀ or ▶ button to adjust the CLOCK.



Before



After

Step 8: Press the OSD button to return to Main Control windows.
Step 9: Save the settings and exit OSD.

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Failure Mode of LCD panel

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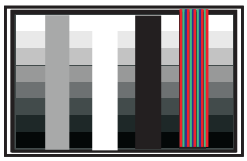
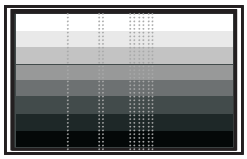
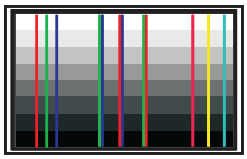
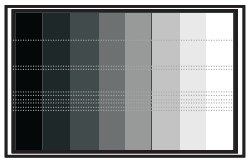
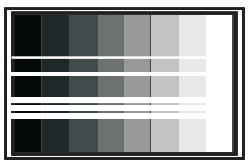
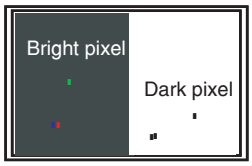
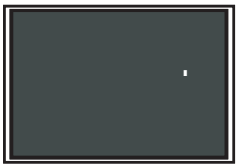
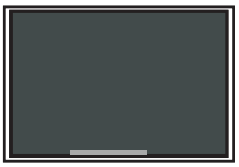
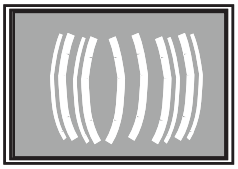
Quick reference for failure mode of LCD panel

This page presents problems that could be made by LCD panel. It is not necessary to repair circuit board. Simply follow the “Mechanical instruction” on this manual to eliminate failure by replace LCD panel or backlight tubes.

Failure description	Phenomenon
Vertical block defect	
Vertical dim lines	
Vertical lines defect (Always bright or dark)	
Horizontal block defect	
Horizontal dim lines block	
Horizontal lines defect (Always bright or dark)	
Has bright or dark pixel	
Polarizer has bubbles	
Polarizer has bubbles	
Foreign material inside polarizer. It shows linear or dot shape.	
Concentric circle formed	
Bottom back light of LCD is brighter than normal	
Backlight un-uniformity	
Backlight has foreign material. Black or white color, linear or circular type	

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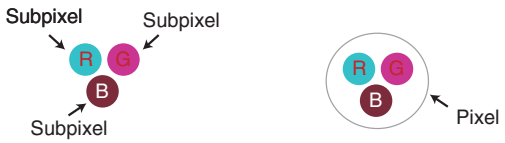
Definition of Pixel Defects

0. General

This section explains the different types of pixel defects and defines acceptable defect levels of each type. In order to qualify for repair or replacement under warranty, the number of pixel defects on a TFT LCD panel must exceed these acceptable levels.

1. Definition of Pixels and Subpixels

A pixel, or picture element , is composed of three subpixels in the primary colors of red, green and blue. Many pixels together from an image. When all subpixels of a pixel are lit, the three colored subpixels together appear as a single white pixel. When all are dark, the three colored subpixels together appear as a single black pixel. Other combinations of lit and dark subpixels appear as single pixels of other colors.



2. Types of Pixel Defects

Pixel and subpixel defects appear on the screen in different ways.

Bright dot defects
Bright dot defects appear as pixels or subpixels that are always lit or “On”. These are the types of bright dot defects:.

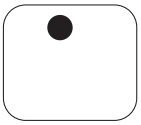
One lit red, green or blue subpixel

Two adjacent lit subpixels:
- Red + Blue = Purple
- Red + Green = Yellow
- Green + Blue = Cyan (Light Blue)

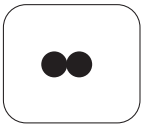
Three adjacent lit subpixels
(One white pixel)

Black dot defects
Black dot defects appear as pixels or subpixels that are always dark or “off”. These are the types of black dot defects:

One dark subpixel



Two or three adjacent dark subpixels



3. Pixel Defect Tolerances

In order to qualify for repair or replacement due to pixel defects during the warranty period, a TFT LCD panel in a PHILIPS flat panel monitor must have pixel or subpixel defects exceeding the tolerances listed in the following tables.

BRIGHT DOT DEFECTS	ACCEPTABLE LEVEL		
MODEL	140S/150B	151AX & 150P	181AS
1 lit subpixel	10 or fewer	6 or fewer	10 or fewer
2 adjacent lit subpixels	3 or fewer	2 or fewer	3 or fewer
3 adjacent lit subpixels (1 white pixel)	None	None	None
Distance between two bright dot defects*	12 mm or more	14 mm or more	14 mm or more
Bright dot defects within 20 mm circle	6 or fewer	4 or fewer	4 or fewer
Total bright dot defects of all types	10 or fewer	6 or fewer	10 or fewer

BLACK DOT DEFECTS	ACCEPTABLE LEVEL		
MODEL	140S/150B	151AX & 150P	181AS
1 dark subpixel	10 or fewer	6 or fewer	10 or fewer
2 adjacent dark subpixels	3 or fewer	1 or fewer	2 or fewer
3 adjacent dark subpixels	None	None	1 or fewer
Distance between two black dot defects	12 mm or more	4 mm or more	14 mm or more
Black dot defects within 20 mm circle	6 or fewer	4 or fewer	5 or fewer
Total black dot defects of all types	10 or fewer	6 or fewer	15 or fewer

TOTAL DOT DEFECTS	ACCEPTABLE LEVEL		
MODEL	140S/150B	151AX & 150P	181AS
Total bright or black dot defects of all types	12 or fewer	10 or fewer	15 or fewer

** 1 or 2 adjacent subpixel defects = 1 dot defect*

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Flat Panel Adjust (FP Adjust)

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Fpadjust program

The Flat Panel Adjust (FPadjust) software helps you to find the best setting for your Philips LCD monitor. It allows you to adjust the image performance of LCD monitor, such as RESOLUTION, AUTO ADJUSTMENT, POSITION, CONTRAST, VIDEO CLOCK and VIDEO PHASE.

Note: Video clock and phase functions are only available for analog video signals.

Install and Run FPadjust

In "MS Windows 95/98" environment : For example
1. Insert CD-DFU(3138 117 01951) to your CD-ROM driver.
2. Run "E:\PC\FPADJUST\SETUP.EXE" as Fig. 1. (Replace E by the letter of your CD-ROM driver)

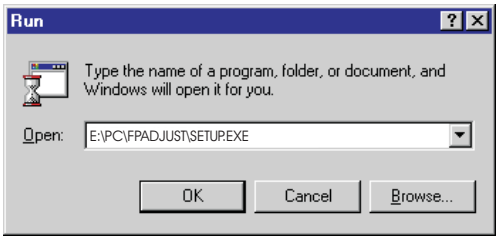
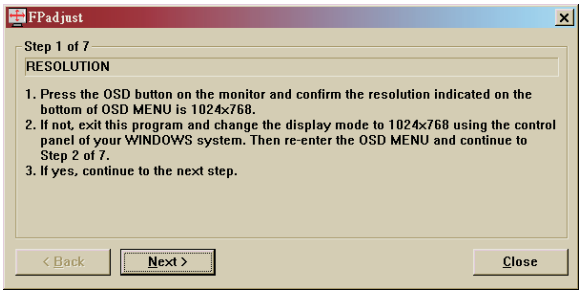


Fig. 1

3. Then follow the instructions to install the FPadjust program.

When finish, double click FPadjust icon " ", then the description (can be moved by mouse) and background pattern come on the screen for image adjustment.

FPadjust program is working as a pattern generator to provide the pattern display on the screen for the adjustment of CONTRAST, CLOCK, PHASE ...etc. Please follow the steps below to adjust your PHILIPS Flat Panel Monitor for best display quality.


FPadjust
Step 1 of 7
RESOLUTION
1. Press the OSD button on the monitor and confirm the resolution indicated on the bottom of OSD MENU is 1024x768.
2. If not, exit this program and change the display mode to 1024x768 using the control panel of your WINDOWS system. Then re-enter the OSD MENU and continue to Step 2 of 7.
3. If yes, continue to the next step.
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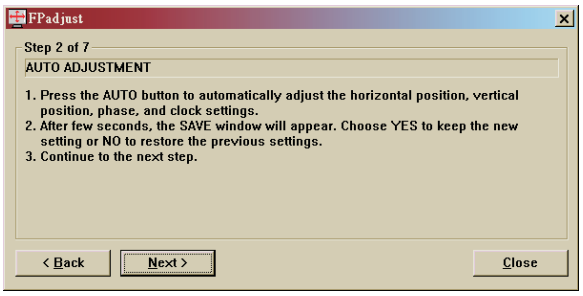
Close


FPadjust
Step 2 of 7
AUTO ADJUSTMENT
1. Press the AUTO button to automatically adjust the horizontal position, vertical position, phase, and clock settings.
2. After few seconds, the SAVE window will appear. Choose YES to keep the new setting or NO to restore the previous settings.
3. Continue to the next step.
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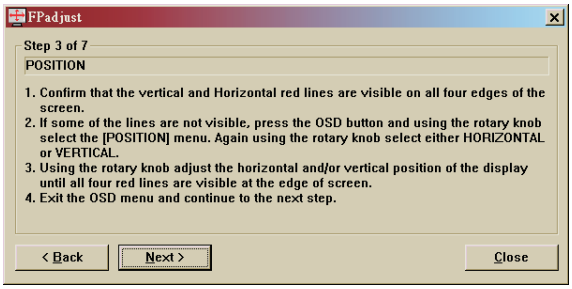
FPadjust
Step 3 of 7
POSITION
1. Confirm that the vertical and Horizontal red lines are visible on all four edges of the screen.
2. If some of the lines are not visible, press the OSD button and using the rotary knob select the [POSITION] menu. Again using the rotary knob select either HORIZONTAL or VERTICAL.
3. Using the rotary knob adjust the horizontal and/or vertical position of the display until all four red lines are visible at the edge of screen.
4. Exit the OSD menu and continue to the next step.
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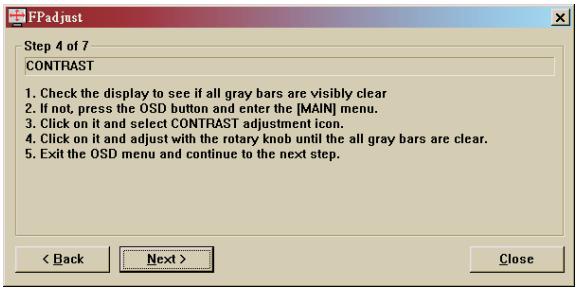
FPadjust
Step 4 of 7
CONTRAST
1. Check the display to see if all gray bars are visibly clear
2. If not, press the OSD button and enter the [MAIN] menu.
3. Click on it and select CONTRAST adjustment icon.
4. Click on it and adjust with the rotary knob until the all gray bars are clear.
5. Exit the OSD menu and continue to the next step.
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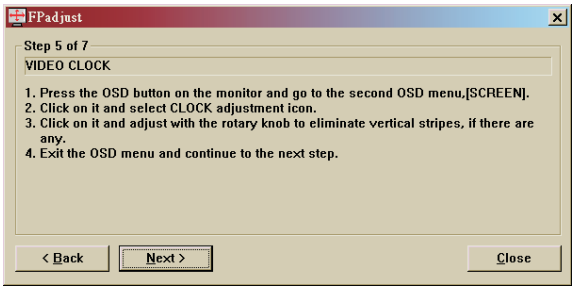
Close


FPadjust
Step 5 of 7
VIDEO CLOCK
1. Press the OSD button on the monitor and go to the second OSD menu,[SCREEN].
2. Click on it and select CLOCK adjustment icon.
3. Click on it and adjust with the rotary knob to eliminate vertical stripes, if there are any.
4. Exit the OSD menu and continue to the next step.
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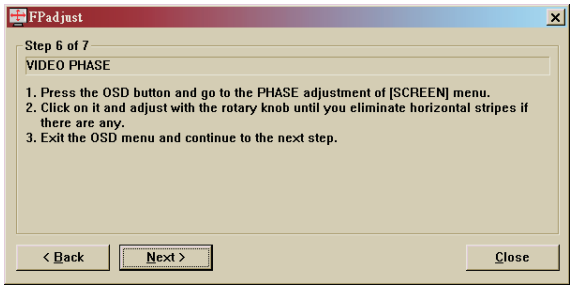
Close


FPadjust
Step 6 of 7
VIDEO PHASE
1. Press the OSD button and go to the PHASE adjustment of [SCREEN] menu.
2. Click on it and adjust with the rotary knob until you eliminate horizontal stripes if there are any.
3. Exit the OSD menu and continue to the next step.
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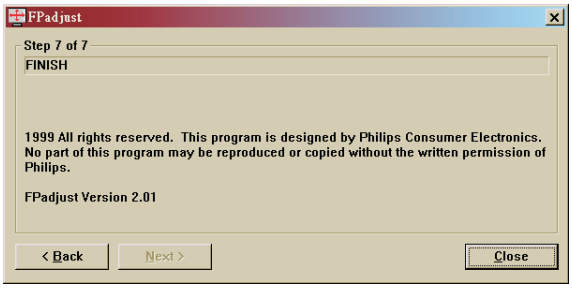
Close


FPadjust
Step 7 of 7
FINISH
1999 All rights reserved. This program is designed by Philips Consumer Electronics. No part of this program may be reproduced or copied without the written permission of Philips.
FPadjust Version 2.01
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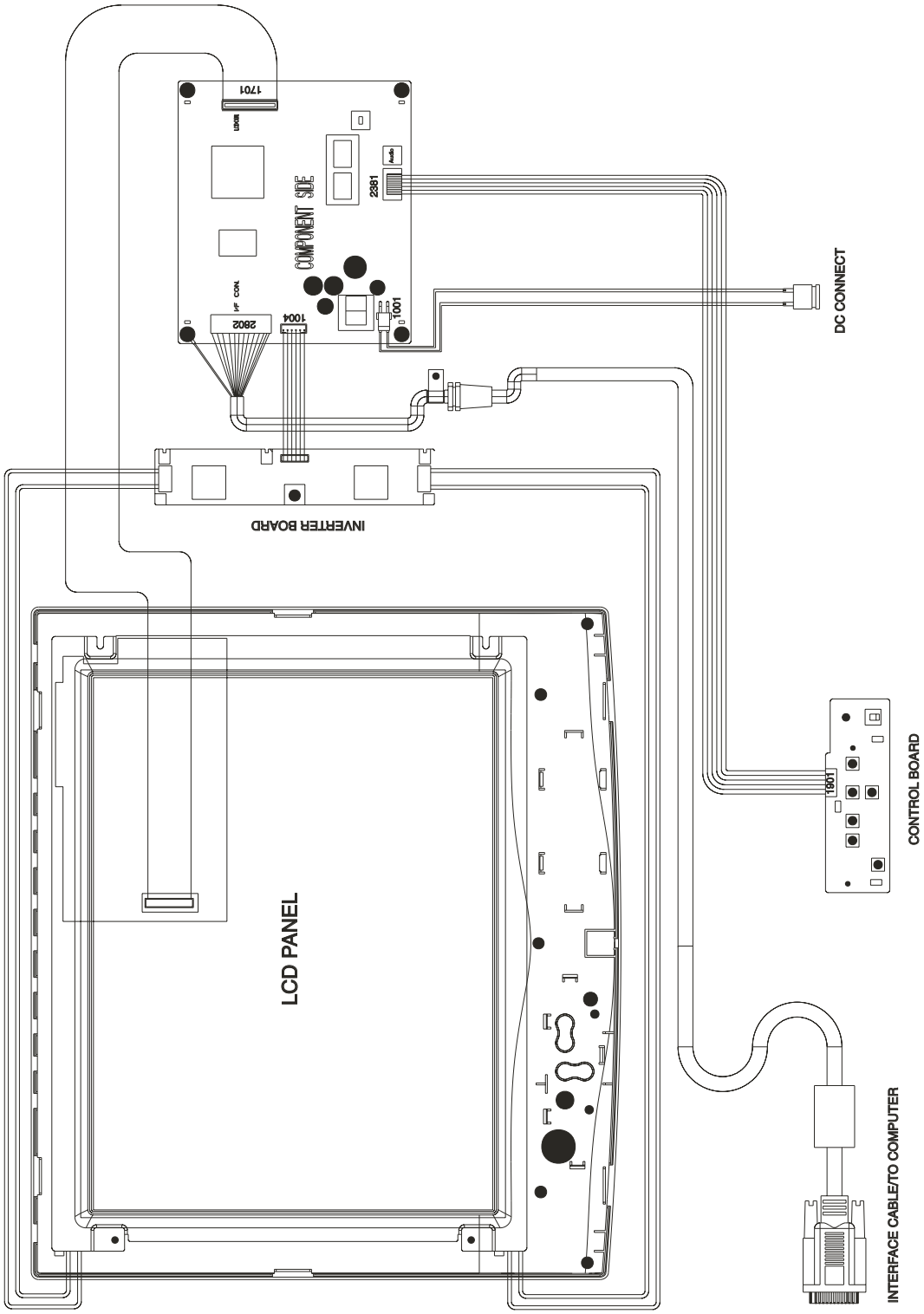
Wiring Diagram



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Safety Test Requirements

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All units that are returned for service or repair must pass the original manufactures safety tests. Safety testing requires both **Hi-pot** and **Ground Continuity** testing.

HI-POT TEST INSTRUCTION

1. Application requirements

1.1 All mains operated products must pass the Hi-Pot test as described in this instruction.

1.2 This test must be performed again after the covers have been refitted following the repair, inspection or modification of the product.

2. Test method

2.1 Connecting conditions

2.1.1 The test specified must be applied between the parallel-blade plug of the mainscord and all accessible metal parts of the product.

2.1.2 Before carrying out the test, reliable conductive connections must be ensured and thereafter be maintained throughout the test period.

2.1.3 The mains switch(es) must be in the "ON" position.

2.2 Test Requirements

All products should be HiPot and Ground Continuity tested as follows:

Condition	HiPot Test for products where the mains input range is Full range(or 220V AC)	HiPot Test for products where the mains input is 110V AC(USA type)	Ground Continuity Test requirement
Test voltage	2820VDC (2000VAC)	1700VDC (1200VAC)	Test current: 25A,AC Test time: 3 seconds(min.) Resistance required: <=0.09+R ohm, R is the resistance of the mains cord.
Test time (min.)	3 seconds	1 second	
Trip current (Tester)	set at 100 uA for Max. limitation; set at 0.1 uA for Min. limitation	5 mA	
Ramp time	set at 2 seconds		

2.2.1 The test with AC voltage is only for production purpose, **Service center shall use DC voltage.**

2.2.2 The minimum test duration for Quality Control Inspector must be 1 minute. No breakdown during the test.

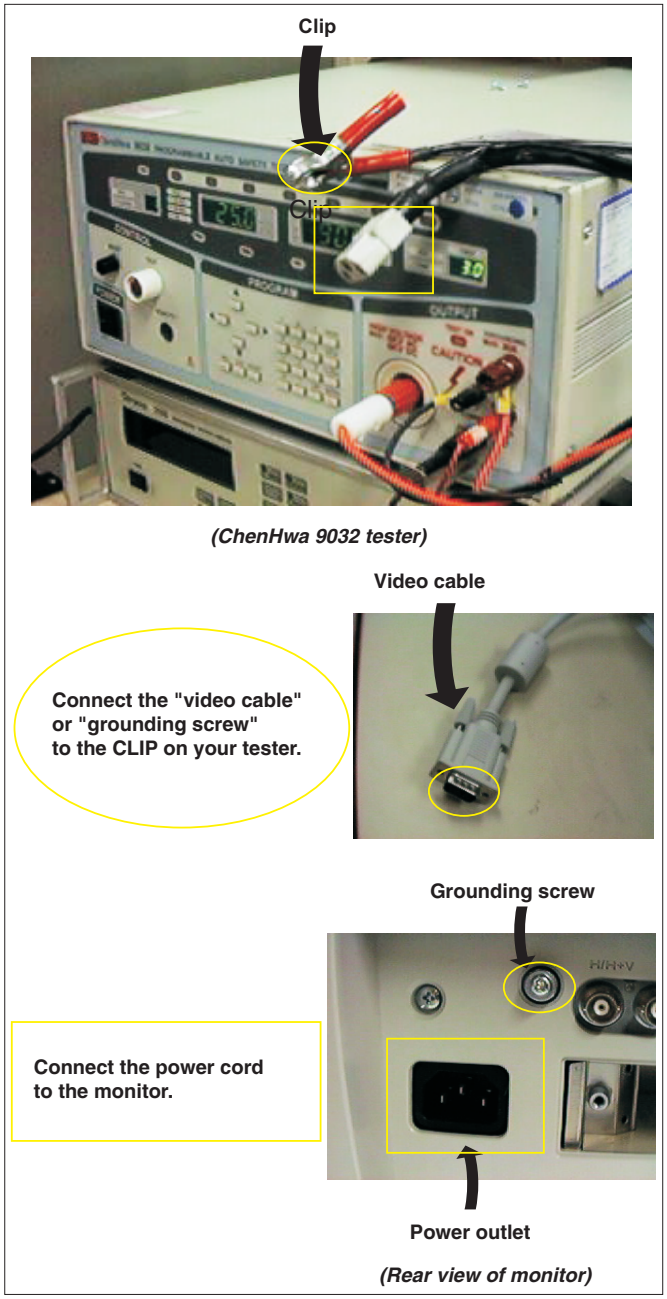
2.2.3 The test voltage must be maintained within the specified voltage + 5%.

2.2.4 The grounding blade or pin of mains plug must be conducted with accessible metal parts.

3. Equipments and Connection

3.1. Equipments
For example :
- ChenHwa 9032 PROGRAMMABLE AUTO SAFETY TESTER
- ChenHwa 510B Digital Grounding Continuity Tester
- ChenHwa 901 (AC Hi-pot test), 902 (AC, DC Hi-pot test) Withstanding Tester

3.2. Connection
* Turn on the power switch of monitor before Hipot and Ground Continuity testing.



4. Recording

Hipot and Ground Continuity testing records have to be kept for a period of 10 years.

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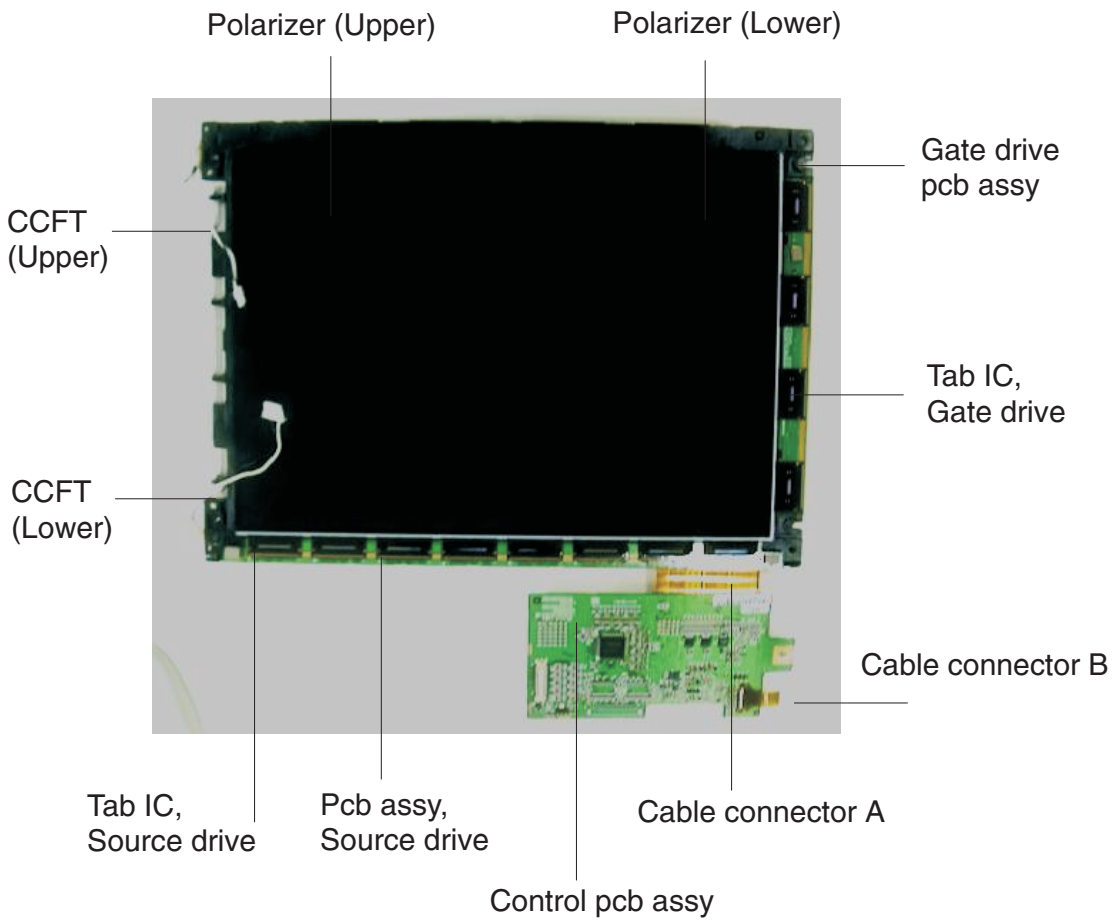
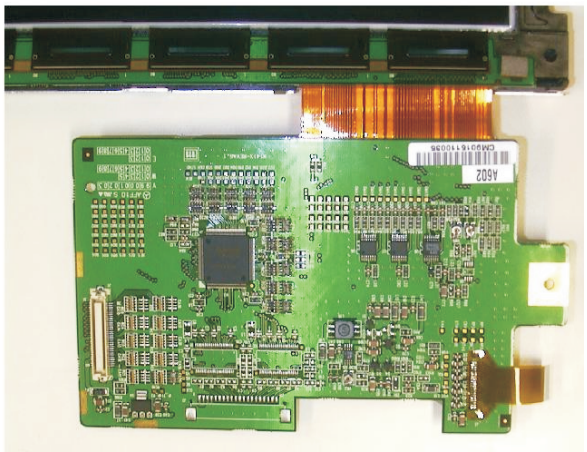
LCD Panel

Chi Mei 14 inches LCD panel





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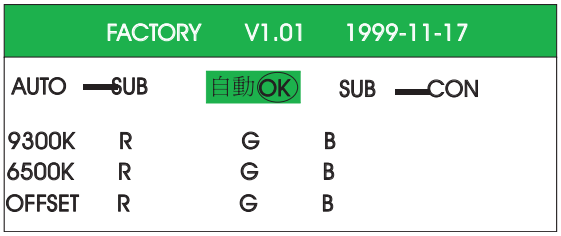
Factory Adjustment

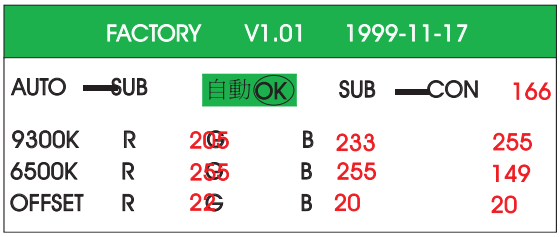
Factory Mode Adjustment

Entering Factory Adjustment Menu
-Turn off monitor(do'nt turn off PC)
- Push [OK] & [AUTO] and " [⏻] " buttons simultaneously on the front control panel ,then press [OK] button to bring up OSD menu of factory mode as shown below.

Use [▼] button to select factory adjustment indication (for example: FACTORY V1.01 1999-11-17), which is the entrance of the factory adjustment menu, press [OK] button to access it. The window shows as below.



Use [▲] or [▼] buttons to select SUB-CON, 9300K R G B,..etc.
Use [◀] or [▶] buttons to decrease/increase the value of each item
AUTO : adjust Sub-brightness & Sub-contrast automatically.



Contrast adjustment (Sub-Contrast). Use this menu item to adjust the contrast gain of pre-amp ranges from 0 to 255.

9300K R G B
6500K R G B
Color temperature gain adjustment. Use these menu items to adjust the RGB gains of pre-amp for different color temperatures, ranges from 0 to 255.

OFFSET R G B
Sub-Brightness adjustment. Use this menu item to adjust the brightness level (DC-level) of pre-amp range from 0 to 255.

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DDC data of Analog

The Display Data Channel (DDC) 1/2B for LG LCD panel Analog

Vendor/Product Identification
- ID Manufacturer Name : PHL
- ID Product Code : 140C (HEX.)
- ID Serial Number : 1E240 (HEX.)
- Week of Manufacture : 15
- Year of Manufacture : 2000

EDID Version, Revision
- Version : 1
- Revision : 1

Basic Display Parameters/Features
- Video Input Definition : Analog Video Input
  0.700V/0.300V (1.00Vpp)
  without Blank-to-Black Setup
  Separate Sync
  Composite Sync
  Sync on Green
  no Serration required
- Maximum H Image Size : 29
- Maximum V Image Size : 22
- Display Transfer Characteristic : 2.2 (gamma)
- Feature Support (DPMS) : Standby
  Suspend
  Active Off
- Display Type : RGB color display

Color Characteristics
- Red X coordinate : 0.557
- Red Y coordinate : 0.329
- Green X coordinate : 0.296
- Green Y coordinate : 0.582
- Blue X coordinate : 0.156
- Blue Y coordinate : 0.132
- White X coordinate : 0.281
- White Y coordinate : 0.311

Established Timings
- Established Timings I : 720 x 400 @ 70Hz(IBM,VGA)
  640 x 480 @ 60Hz(IBM,VGA)
  640 x 480 @ 67Hz(Apple, Mac II)
  640 x 480 @ 72Hz (VESA)
  640 x 480 @ 75Hz (VESA)
  800 x 600 @ 56Hz (VESA)
  800 x 600 @ 60Hz (VESA)
- Established Timings II : 800 x 600 @ 72Hz (VESA)
  800 x 600 @ 75Hz (VESA)
  832 x 624 @ 75Hz(Apple, Mac II)
  1024 x 768 @ 60Hz (VESA)
  1024 x 768 @ 70Hz (VESA)
  1024 x 768 @ 75Hz (VESA)

Detailed Timing #1
- Pixel Clock (MHz) : 25.18
- H Active (pixels) : 640
- H Blanking (pixels) : 160
- V Active (lines) : 350
- V Blanking (lines) : 99
- H Sync Offset (F Porch) (pixels) : 16
- H Sync Pulse Width (pixels) : 96
- V Sync Offset (F Porch) (lines) : 37
- V Sync Pulse Width (lines) : 2
- H Image Size (mm) : 306
- V Image Size (mm) : 230
- H Border (pixels) : 0
- V Border (lines) : 0
- Flags : Non-interlaced
  : Normal Display, No stereo
  : Digital Separate sync.
  : Negative Vertical Sync.
  : Negative Horizontal Sync.

Monitor Descriptor #2
- Serial Number : TY 123456

Monitor Descriptor #3
- Monitor Name : PHILIPS 140S

Monitor Descriptor #4
- Monitor Range Limits
- Min. Vt rate Hz : 56
- Max. Vt rate Hz : 75
- Min. Horiz. rate kHz : 30
- Max. Horiz. rate kHz : 61
- Max. Supported Pixel : 80

Extension Flag : 0

Check sum : f2 (HEX.)

****
EDID data (128 bytes)
****

0: 00	1: ff	2: ff	3: ff	4: ff	5: ff	6: ff	7: 00
8: 41	9: 0c	10: 0c	11: 14	12: 40	13: e2	14: 01	15: 00
16: 0f	17: 0a	18: 01	19: 01	20: 6e	21: 1d	22: 16	23: 78
24: e8	25:9c	26: 32	27: 8e	28: 54	29: 4b	30: 95	31: 28
32: 21	33: 48	34: 4f	35: bf	36: ee	37: 00	38: 01	39: 01
40: 01	41: 01	42: 01	43: 01	44: 01	45: 01	46: 01	47: 01
48: 01	49: 01	50: 01	51: 01	52: 01	53: 01	54: d6	55: 09
56: 80	57: a0	58: 20	59: 5e	60: 63	61: 10	62: 10	63: 60
64: 52	65: 08	66: 32	67: e6	68: 10	69: 00	70: 00	71: 1a
72: 00	73: 00	74: 00	75: ff	76: 00	77: 20	78: 54	79: 59
80: 20	81: 20	82: 31	83: 32	84: 33	85: 34	86: 35	87: 36
88: 0a	89: 20	90: 00	91: 00	92: 00	93: fc	94: 00	95: 50
96: 48	97: 49	98: 4c	99: 49	100: 50	101: 53	102: 20	103: 31
104: 34	105: 30	106: 53	107: 0a	108: 00	109: 00	110: 00	111: fd
112: 00	113: 38	114: 4b	115: 1e	116: 3d	117: 08	118: 00	119: 0a
120: 20	121: 20	122: 20	123: 20	124: 20	125: 20	126: 00	127: f2

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Block diagram

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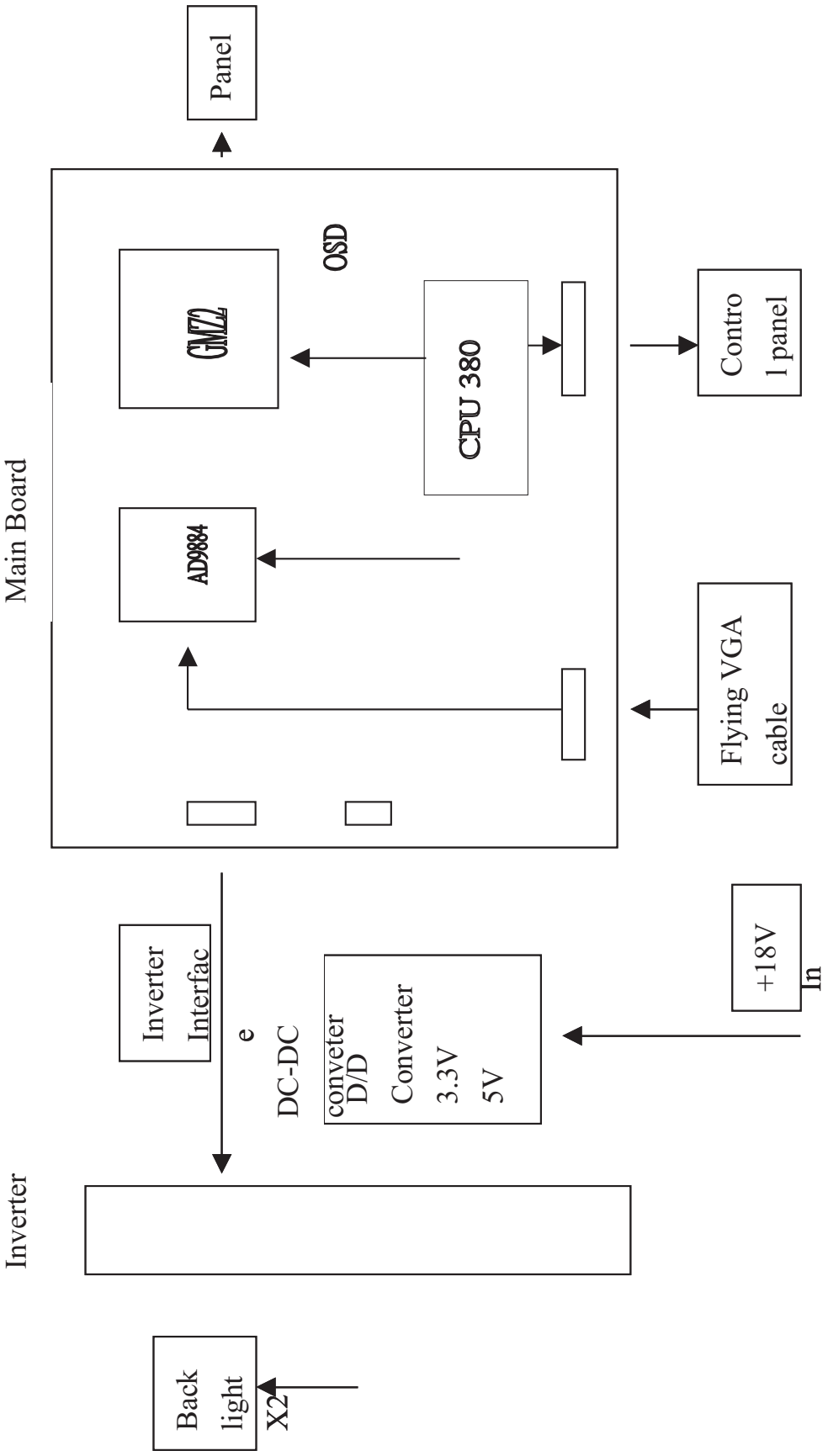

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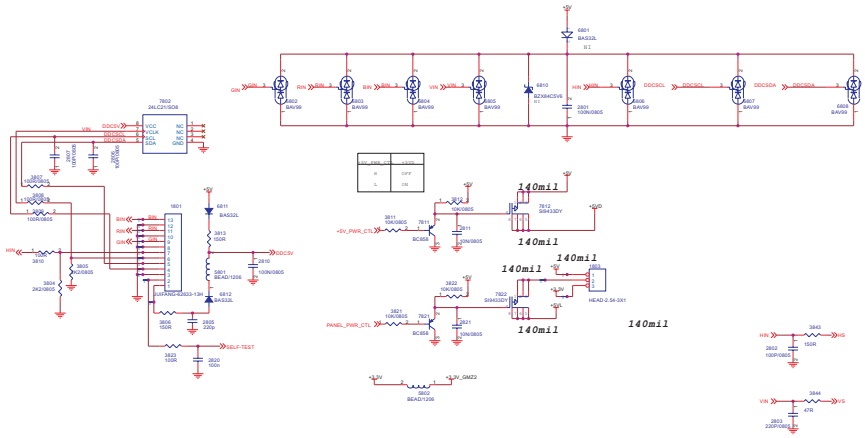
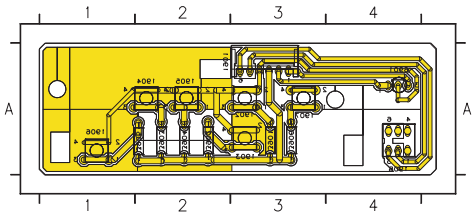
POWER and VIDEO IN Schematic Diagram



Control Panel C.B.A



1.use power trace,but not power plane except specified
2.bypass CAP and BEAD must close to the pin
3.VCC traces use 20 mil if not specified
4.place copper under crystal and oscillator,
trace and its CAP must close to IC pin as possible
5.clock width about 10 mil, as short as possible
keep >30mil gap with other trace
6.add 4 mm copper ring on solder side

FOTOMAC-1.SCH

Size	Document Number	Rev
C	POWER IN & VIDEO IN	01A
Date: Thursday, March 16, 2000	Sheet 1 of 6	

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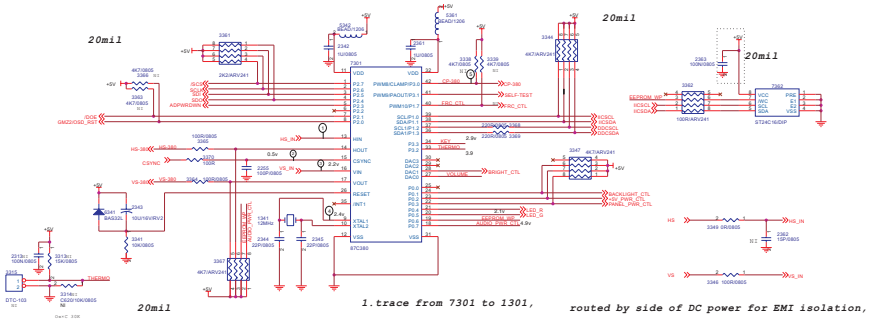
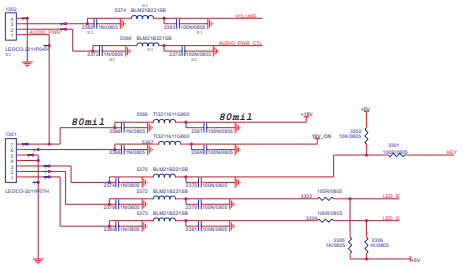
CPU Schematic Diagram





FOTOMAC-2.SCH

Size	Document Number	Rev
Custom	MCPU	3A6A
Date: Thursday, March 16, 2000	Sheet 2 of 6	

1 7301-13
0.2 V/div AC
5 uS/div

2 7301-15
0.1 V/div AC
5 uS/div

3 7301-16
0.2 V/div AC
5 mS/div

4 7301-9
0.2 V/div AC
50nS/div

5 7301-42
0.2 V/div AC
5 uS/div

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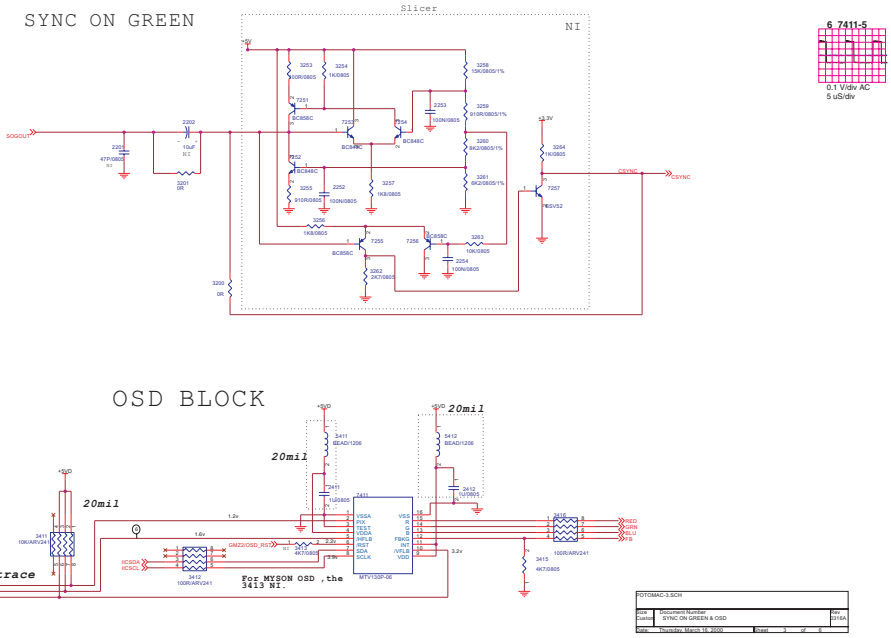
SOG & OSD Schematic Diagram



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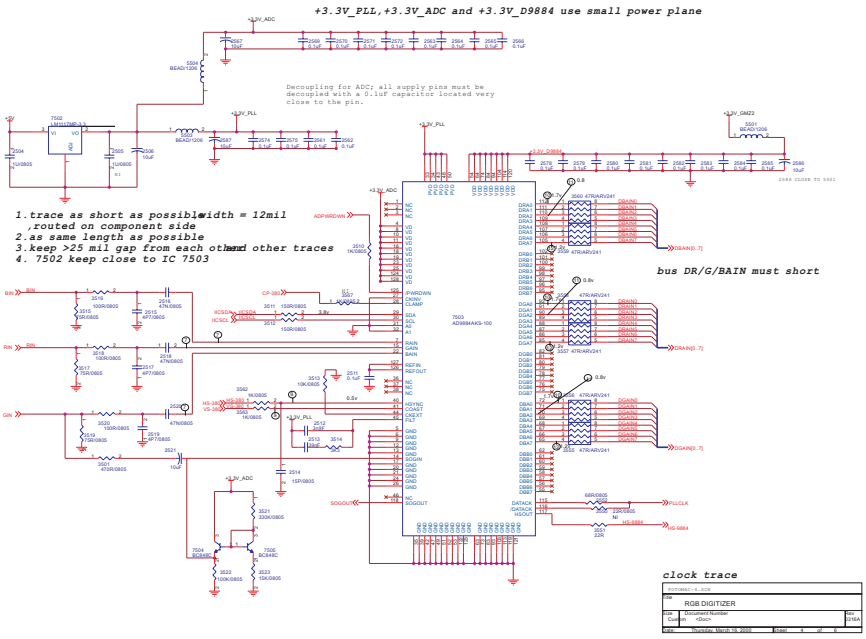
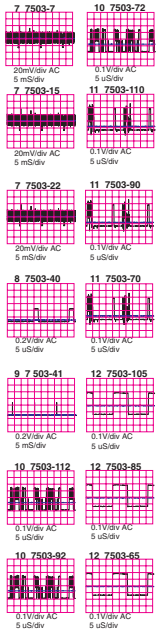
RGB Digitzer Schematic Diagram


+3.3V_PLL,+3.3V_ADC and +3.3V_D9884 use small power plane
Decoupling for ADC; all supply pins must be decoupled with a 0.1uF capacitor located very close to the pin.
1.trace as short as possible,width = 12mil ,routed on component side
2.as same length as possible
3.keep >25 mil gap from each other and other traces
4. 7502 keep close to IC 7503
bus DR/G/BAIN must short
clock trace
RGB DIGITIZER



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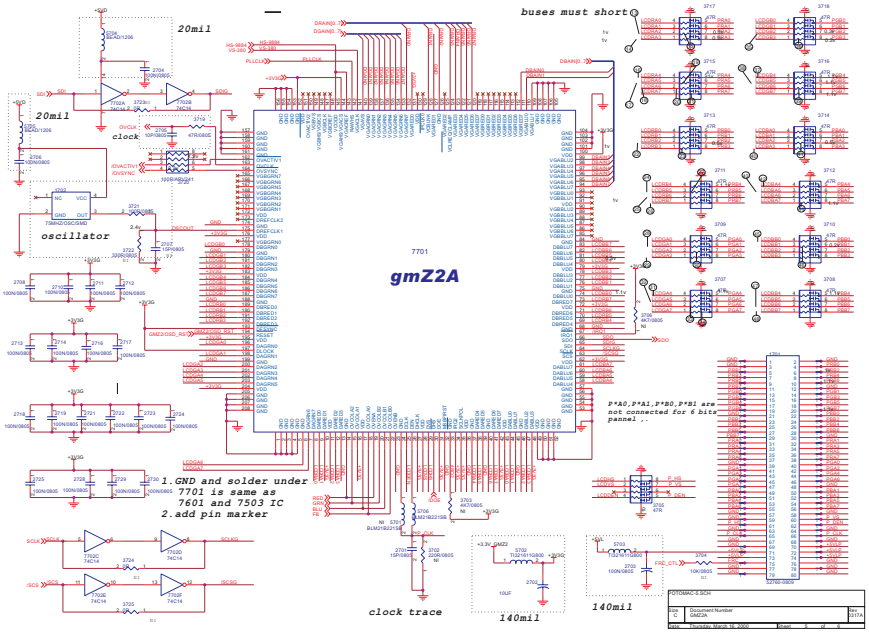
GMZ1 Schematic Diagram



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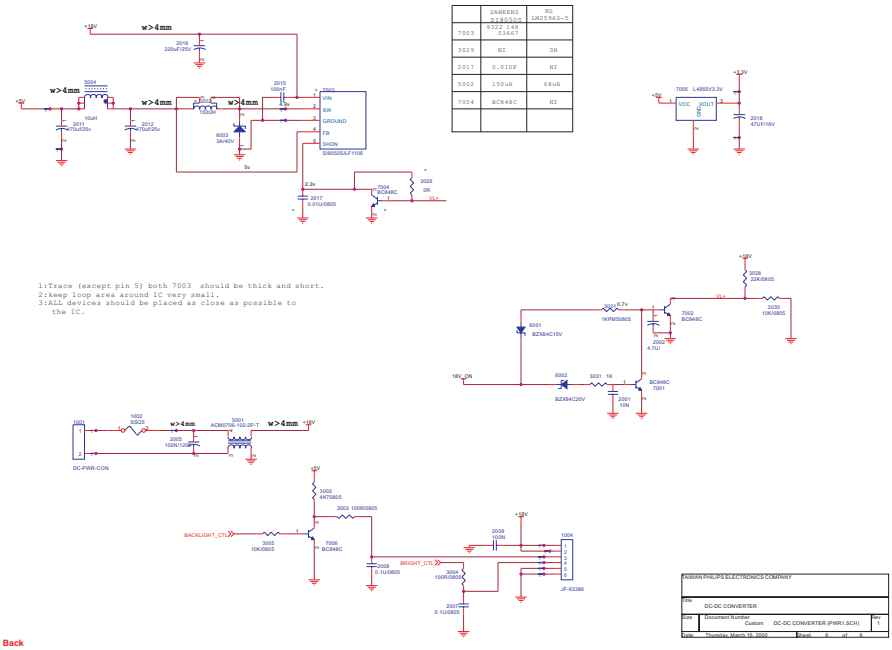
DC-DC Converter Schematic Diagram


1:Trace (except pin 5) both 7003 should be thick and short.
2:keep loop area around IC very small.
3:ALL devices should be placed as close as possible to the IC.
DC-PWR-CON
BACKLIGHT_CTL
BRIGHT_CTL
JF-63386

	SANKENS SI8050JF	NS LM2596S-5
7003	9322 148 03667	
3029	NI	OR
2017	0.01UF	NI
5002	150uH	68uH
7004	BC848C	NI

ASIAN PHILIPS ELECTRONICS COMPANY		
Title	DC-DC CONVERTER	
Size	Document Number: Custom DC-DC CONVERTER (PWR1.SCH)	Rev: 1
Date: Thursday, March 16, 2000	Sheet 4 of 6	

13 3717-2 0.2V/div AC 5 uS/div
20 3715-7 0.2V/div AC 5 uS/div
27 3711-6 0.2V/div AC 5 uS/div
34 3707-8 0.2V/div AC 5 uS/div
41 3714-7 0.2V/div AC 5 uS/div
48 3708-1 0.2V/div AC 5 uS/div
14 3717-1 0.2V/div AC 5 uS/div
21 3715-8 0.2V/div AC 5 uS/div
28 3709-3 0.2V/div AC 5 uS/div
35 3718-2 0.2V/div AC 5 uS/div
42 3712-4 0.2V/div AC 5 uS/div
15 3717-7 0.2V/div AC 5 uS/div
22 3713-2 0.2V/div AC 5 uS/div
29 3709-1 0.2V/div AC 5 uS/div
36 3718-8 0.2V/div AC 5 uS/div
43 3712-3 0.2V/div AC 5 uS/div
16 3715-4 0.2V/div AC 5 uS/div
23 3713-8 0.2V/div AC 5 uS/div
30 3709-7 0.2V/div AC 5 uS/div
37 3716-4 0.2V/div AC 5 uS/div
44 3712-8 0.2V/div AC 5 uS/div
17 3715-3 0.2V/div AC 5 uS/div
24 3711-3 0.2V/div AC 5 uS/div
31 3707-4 0.2V/div AC 5 uS/div
38 3716-3 0.2V/div AC 5 uS/div
45 3710-4 0.2V/div AC 5 uS/div
18 3715-2 0.2V/div AC 5 uS/div
25 3711-2 0.2V/div AC 5 uS/div
32 3707-3 0.2V/div AC 5 uS/div
39 3716-7 0.2V/div AC 5 uS/div
46 3710-6 0.2V/div AC 5 uS/div
19 3757-6 0.2V/div AC 5 uS/div
26 3711-1 0.2V/div AC 5 uS/div
33 3707-7 0.2V/div AC 5 uS/div
40 3714-1 0.2V/div AC 5 uS/div
47 3708-2 0.2V/div AC 5 uS/div

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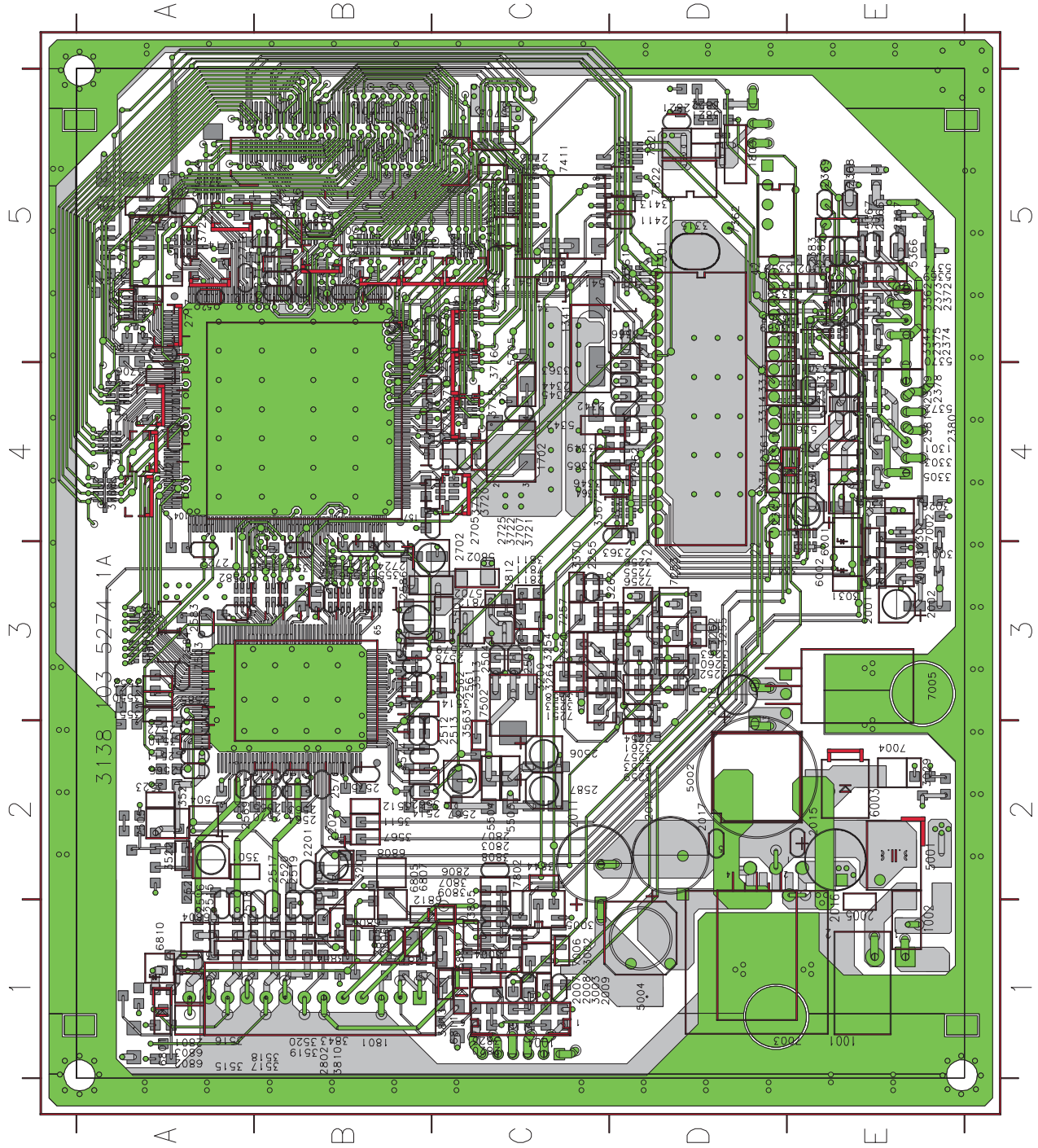
Main Board (C.B.A)



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Main Panel Mapping

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1001	E1	2710	B5	3556	B3	7362	D5
1002	E1	2711	B5	3557	B3	7411	C5
1004	C1	2712	A5	3558	B3	7502	C3
1301	E4	2713	C5	3559	A3	7503	A3
1302	E5	2714	B5	3560	A3	7504	A2
1341	C5	2716	A5	3562	B2	7505	A2
1701	B5	2717	A5	3563	C2	7701	A4
1702	C4	2718	A5	3567	B2	7702	A5
1801	B1	2719	C4	3702	B5	7802	C2
1803	D5	2721	A4	3703	B5	7811	C3
2001	E3	2722	A3	3704	C5	7812	C3
2002	E3	2723	B3	3705	B5	7821	D5
2005	E1	2724	B3	3706	A4	7822	D5
2007	C1	2725	C4	3707	B5	1901	A2
2008	C1	2728	C4	3708	A4	1902	A3
2009	C1	2729	B3	3709	C5	1903	A3
2011	C2	2730	C5	3710	A4	1904	A2
2012	D2	2801	A1	3711	A4	1905	A2
2015	E2	2802	B1	3712	A5	1906	A1
2016	E1	2803	C2	3713	C5	1907	A3
2017	D2	2805	B1	3714	A5	1908	A4
2018	D3	2806	C2	3715	A5	3901	A3
2201	B2	2807	C2	3716	C4	3902	A2
2202	B2	2810	B1	3717	B5	3903	A2
2252	D3	2811	C3	3718	C4	3904	A2
2253	D2	2820	C1	3719	C4	3905	A2
2254	D2	2821	D5	3720	C4	3906	A3
2255	C3	3001	E3	3721	C4	6901	A4
2313	E4	3002	C1	3722	C4		
2342	C4	3003	C1	3723	A5		
2343	D4	3004	C1	3724	A5		
2344	C4	3005	C1	3725	A5		
2345	C4	3028	E4	3804	B1		
2361	D4	3029	E2	3805	C1		
2362	D4	3030	E3	3806	B1		
2363	D3	3031	E3	3807	C2		
2366	E5	3200	C3	3808	C2		
2367	E5	3201	B2	3809	C2		
2368	E5	3253	C3	3810	B1		
2369	E5	3254	C3	3811	C3		
2372	E5	3255	D3	3812	C3		
2373	E5	3256	D3	3813	C1		
2374	E5	3257	D2	3821	D5		
2375	E5	3258	C3	3822	D5		
2378	E4	3259	D2	3823	C1		
2379	E4	3260	D3	3843	B1		
2380	E4	3261	D2	3844	C2		
2381	E4	3262	D3	5001	E2		
2382	E5	3263	D3	5002	D2		
2383	E5	3264	C3	5004	D1		
2411	D5	3301	E4	5342	C4		
2412	C5	3302	E5	5361	E4		
2504	C3	3303	E4	5366	E5		
2505	C3	3304	E4	5367	E5		
2506	C2	3305	E4	5369	E5		
2511	A2	3306	E4	5370	E5		
2512	C2	3313	D4	5372	E4		
2513	C2	3314	D4	5373	E4		
2514	B2	3315	D5	5374	E5		
2515	A2	3338	D5	5411	C5		
2516	A2	3339	D5	5412	C5		
2517	B2	3341	D4	5501	C3		
2518	A1	3344	E5	5503	C2		
2519	B2	3346	C4	5504	C2		
2520	B2	3347	D3	5701	B5		
2521	A2	3349	C4	5702	C3		
2561	C3	3361	D5	5703	C5		
2562	C3	3362	E5	5704	A5		
2563	B2	3363	C4	5705	C5		
2564	B2	3364	C4	5706	B5		
2565	B2	3365	C4	5801	C1		
2566	A2	3366	D5	5802	C3		
2567	C2	3367	C4	6001	E3		
2569	A2	3368	D5	6002	E3		
2570	B2	3369	D5	6003	E2		
2571	B2	3370	C3	6341	D4		
2572	A2	3411	C5	6801	A1		
2574	B2	3412	D5	6802	A1		
2575	B2	3413	D5	6803	A1		
2578	C3	3415	C5	6804	A1		
2579	C3	3416	C5	6805	B2		
2580	B3	3501	A2	6806	B1		
2581	B3	3510	A2	6807	B2		
2582	A3	3511	B2	6808	B2		
2583	A3	3512	B2	6810	A1		
2584	A3	3513	C3	6811	C1		
2585	A3	3514	C3	6812	B1		
2586	B3	3515	A1	7001	E3		
2587	C2	3516	A1	7002	E4		
2701	B5	3517	B1	7003	E1		
2702	C3	3518	B1	7004	E2		
2703	C5	3519	B1	7006	C1		
2704	A5	3520	B1	7251	C3		
2705	C4	3521	A2	7252	D3		
2706	C4	3522	A2	7253	D3		
2707	C4	3523	A2	7254	C3		
2708	B5	3550	A3	7255	D3		
		3551	A3	7256	D3		
		3552	A3	7257	C3		
		3555	B3	7301	D5		

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0. Warning

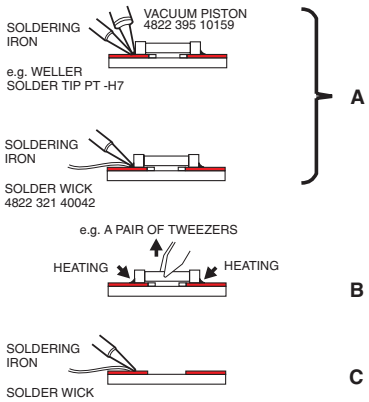
All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the unit via a wrist wrap with resistance. Keep components and tools also at the same potential !

1. Servicing of SMDs (Surface Mounted Devices)

1.1 General cautions on handling and storage
- Oxidation on the terminals of SMDs results in poor soldering. Do not handle SMDs with bare hands.
- Avoid using storage places that are sensitive to oxidation such as places with sulphur or chlorine gas, direct sunlight, high temperatures or a high degree of humidity. The capacitance or resistance value of the SMDs may be affected by this.
- Rough handling of circuit boards containing SMDs may cause damage to the components as well as the circuit boards. Circuit boards containing SMDs should never be bent or flexed. Different circuit board materials expand and contract at different rates when heated or cooled and the components and/or solder connections may be damaged due to the stress. Never rub or scrape chip components as this may cause the value of the component to change. Similarly, do not slide the circuit board across any surface.

1.2 Removal of SMDs
- Heat the solder (for 2-3 seconds) at each terminal of the chip. By means of litz wire and a slight horizontal force, small components can be removed with the soldering iron. They can also be removed with a solder sucker (see Fig. 1A)

Fig. 1 DISMOUNTING

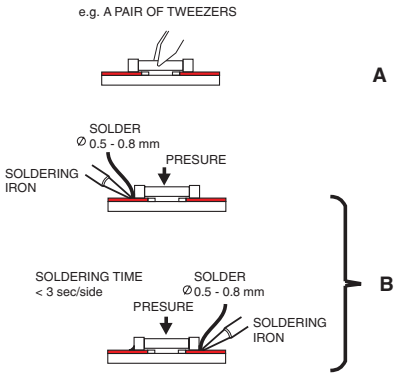


- While holding the SMD with a pair of tweezers, take it off gently using the soldering iron's heat applied to each terminal (see Fig. 1 B).
- Remove the excess solder on the solder lands by means of litz wire or a solder sucker (see Fig. 1C).

1.3 Caution on removal
- When handling the soldering.iron. use suitable pressure and be careful.
- When removing the chip, do not use undue force with the pair of tweezers.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).
- The chip, once removed, must never be reused.

1.4 Attachment of SMDs
- Locate the SMD on the solder lands by means of tweezers and solder the component on one side. Ensure that the component is Positioned correctly on the solder lands (see Fig.2A).
- Next complete the soldering of the terminals of the component (see Fig. 2B).

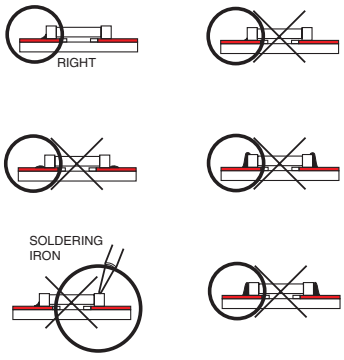
Fig. 2 MOUNTING



2. Caution when attaching SMDs

- When soldering the SMD terminals, do not touch them directly with the soldering iron. The soldering should be done as quickly as possible, care must be taken to avoid damage to the terminals of the SMDs themselves.
- Keep the SMD's body in contact with the printed board when soldering.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).
- Soldering should not be done outside the solder land.
- Soldering flux (of rosin) may be used, but should not be acidic.
- After soldering, let the SMD cool down gradually at room temperature.
- The quantity of solder must be proportional to the size of the solder land. If the quantity is too great, the SMD might crack or the solder lands might be torn loose from the printed board (see Fig. 3).

Fig. 3 Examples



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Exploded View

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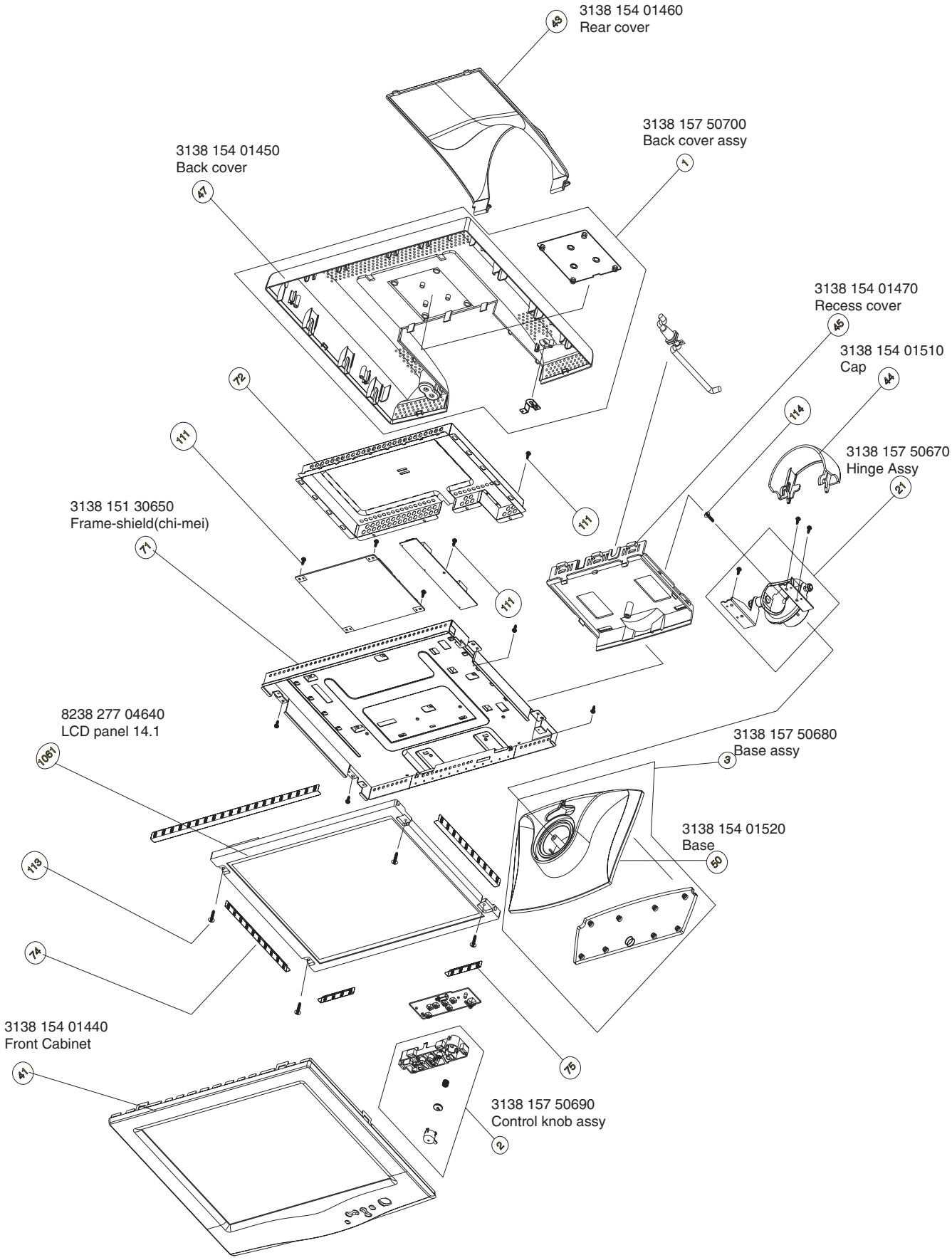

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Recommended parts list

MOdel : 140S1M/00

ITEM	CODENUMBER	DESCRIPT
1	3138 157 50701	BACK COVER ASSY
2	3138 157 50691	CONTROL KNOB ASSY
3	3138 157 50681	BASE ASSY
41	3138 154 01441	FRONT CABINET
43	3138 154 01461	REAR COVER
44	3138 154 01511	CAP
45	3138 154 01471	RECESS-COVER
46	3138 104 45691	HOUSING COVER
48	3138 154 01481	CONTROL KNOB
49	3138 154 01491	POWER KNOB
50	3138 154 01521	BASE
50	3138 154 01501	LENS-POWER
51	3138 154 01531	HINGE BASE
178	3138 155 20431	QUICK SETUP GUIDE
450	3138 156 30031	CARTON
451	3138 156 30011	CUSHION-FRONT
452	3138 156 30021	CUSHION-REAR
453	3138 156 20611	P.E.BAG-ANTI-STAT.
	3138 117 02400	E-D.F.U ASS'Y
1002	2422 086 10929	FUSE SM SSQ F 5.0A 125V R
1051	2438 070 98032	MAINS CORD (220V)
1052	3138 168 77001	I/F CABLE (CE100902-0056510)
1053	3138 168 75781	AC ADAPTER
1061	8238 277 04641	LCD PANEL 14.1/0.279P/W/OF/TFT
1063	8238 277 04901	INVERTER(POTOMAC CHI-MEI PANEL)
1064	8238 277 05501	FPC CABLE (TP-D20A)
1151	3138 158 51921	POTOMAC14 -MAIN PCB ASSY
1152	3138 158 51931	POTOMAC14 -CONTROL PCB ASSY
1391	3138 158 51951	CPU WITH PROGRAM ASSY (7301)
1392	3138 158 51961	EEPROM IC ASSY (7362)
1702	2722 171 08702	CRYSTAL-75MHZ OSC (DSO75ISB)
7003	9322 148 03667	IC SI8050S LF1102 5P
7004	3198 010 42081	TRANS BC848C (UAW)
7005	8238 277 05561	REGULATOR L4955V3.3
7411	8238 274 37641	OSD IC MTV130-06
7502	8238 277 04291	LM1117MPX-3.3
7503	8238 277 04281	AD9884AKST-100
7701	8238 277 05271	IC gmz2a
7702	9337 144 00657	IC 74HC14D 14P
7802	8238 277 02751	IC ST24LC21/M6-TR
7812	9322 115 29668	MOSFET SI9433DY

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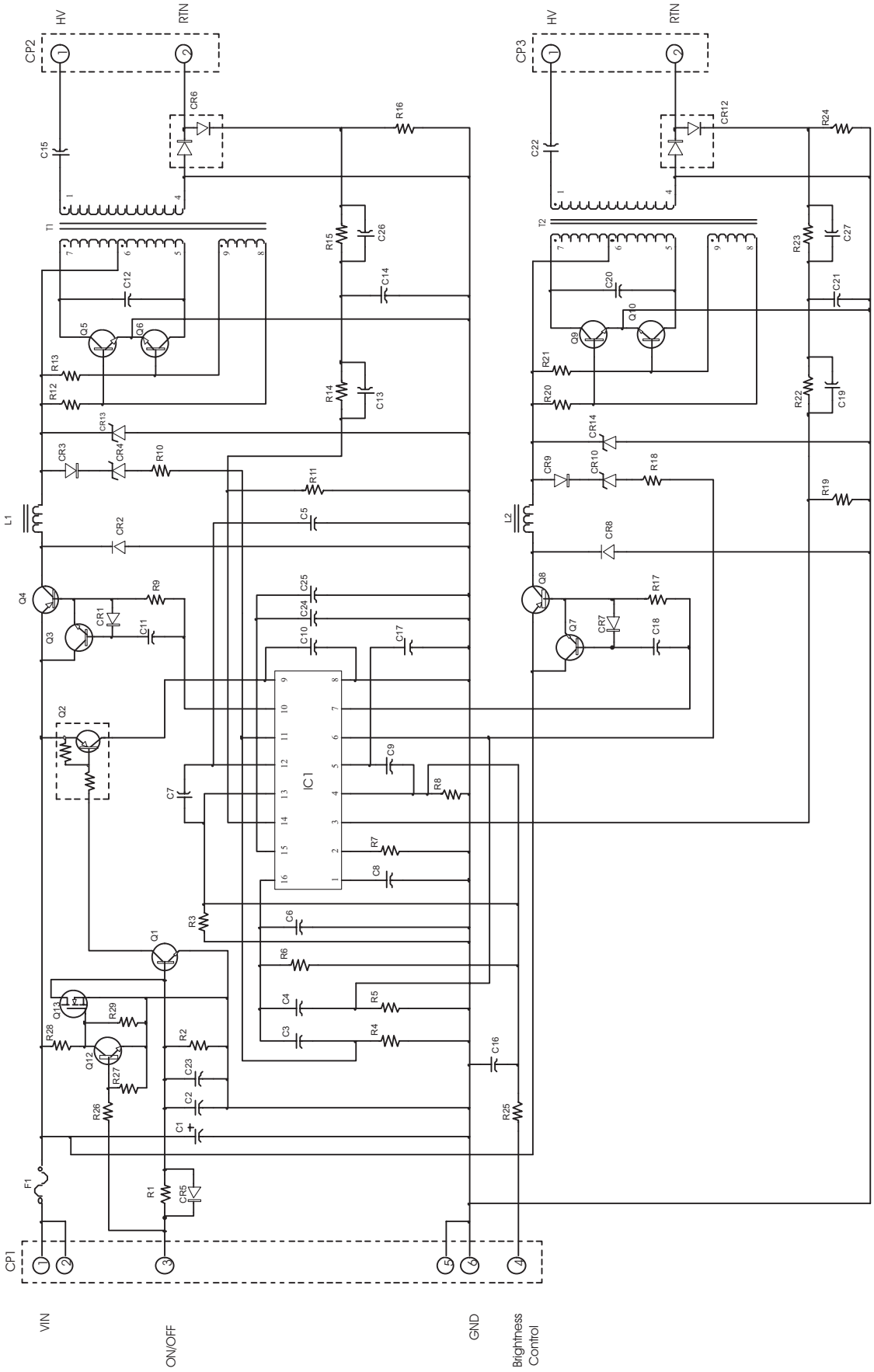
Inverter Schematic Diagram



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Inverter Panel (C.B.A)

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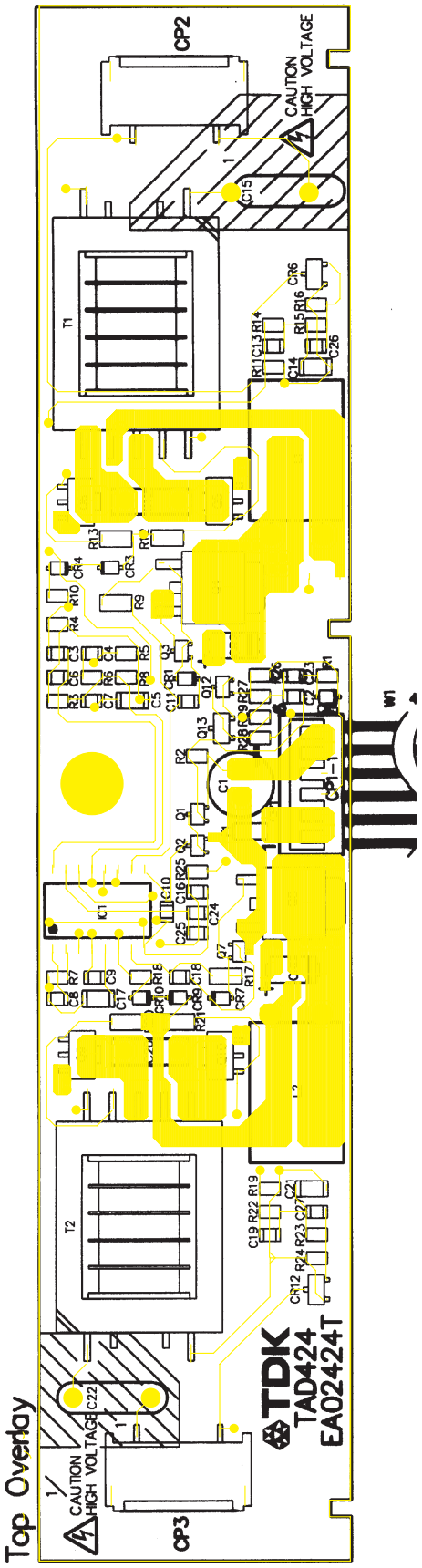

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Recommanded Parts list

Recomanded Parts list fot TAD-424-8

No.	Description	Category	TDK P/N	Manufacturer	Philips code
C12	BF014E0104JDC	CAPACITOR	NN12268	THOMSON-CSF	
C15	CC45SL3FD180JYAN	CAPACITOR	BN2328000A	TDK	
	SFPB-54		NN25398	SANKEN	
CR2	EC10QS04-TE12L	DIODE	NN25256	INTECH	
CR13	RLZTE-11 15C	DIODE	NN25566	ROHM	
				LITTELFUSE	
F1	R4291.75	FUSE	NN52102	UL: E10480(N)	
	1.75A,63Vdc			CSA: LR29862	
	TL1451CNS		NN35149	TI	
IC1	TL1451A	IC	NN35111	TI	
Q2	DTA114EU-T106(T107)	TRANSISTOR	NN30149	ROHM	
	2SD1819A-R-TX(TW)		NN30147	MATSUSHITA	
Q3	2SC4116Y	TRANSISTOR	NN30185	TOSHIBA	
	2SC4081 T106		NN30243	ROHM	
	2SB1203-S/T-TL(TR)		NN30145	SANYO	
Q4	2SB1204S/T	TRANSISTOR	NN30184	SANYO	
	2SB1205S		NN30258	SANYO	
	FCX619		NN30278	ZETEX	
Q5	2SD2403GY-T1(T2)	TRANSISTOR	NN30148	NEC	
	ZXM61N02F		NN30298	ZETEX	
Q13	2SK2158-T1B	TRANSISTOR	NN30269	TOSHIBA	
T1	NIA15/20EM-T16H004	TRANSFORMER	NP80028	TDK	

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Mechanical Instructions

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0. General

To be able to perform measurements and repairs on the "circuit boards". these units should be placed in the service position first.

1. Removing the Back Cover

Step 1: To remove the back cover, simple press the clips on its underside, then pull out and down.t as shown in Fig. 1.

Step 2: Remove the plastic ring from the hinge, then disconnect the DC power cord as shown in Fig. 2.

2. Removing the Bezel

Step 1: Release the bezel by using an optional tool (3138 106 10076) as shown in Fig. 3 to pry open the 4 clips as shown in Fig. 4.

Step 2: Remove the bezel as shown in Fig. 5

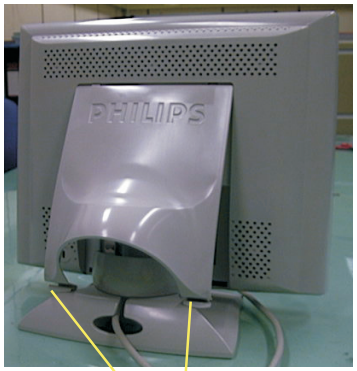
3. Removing the back bezel Cover

Step 1: Remove the 4 screws for middle cover on front side of the units as shown in Fig. 5.

Step 2: Face to the rear of the monitor, then remove the 4 screws for the Hing Pivot to separate the Panel set from the Base pedestal.

step 3: Place the Panel set on a soft and plain surface and remove the back belzel cover.

Fig. 1



Plastic Clips

Fig. 2

Fig. 3

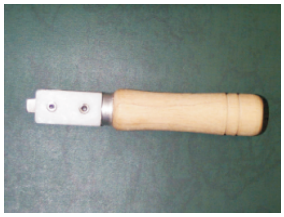


Fig.4

Remove the bezel

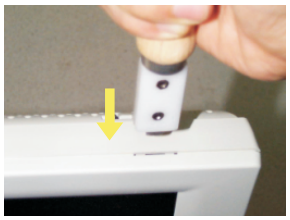
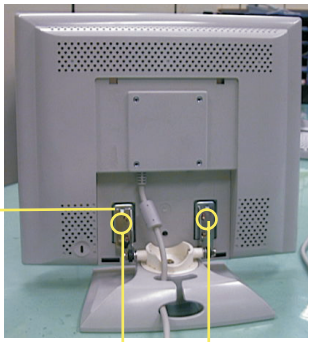


Fig. 5

Fig. 6



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Mechanical Instructions (Continued)

4. Removing the metal cover

Step 1: Remove the 4 screws on the metal cover as shown in Fig. 8.
Step 2: Disconnect the I/F cable must be remove 1 screw on metal cover as shown in Fig. 8.

5. Removing the Main Board

Step 1: Disconnect the 1801, 1004,1301 and 1701 connectors of the Main Board as shown in Fig. 9.
Step 2: Remove the 4 screws on the Main Board.
Step 3: Remove the Main Board.

6. Removing the Inverter Board

Step 1: Disconnect the J2 and J3 connectors of the Inverter Board as shown in Fig. 9.
Step 2: Remove the screw on the Inverter Board.
Step 3: Remove the Inverter Board.

7. Removing the backlights

Step 1: Place the Panel upward, remove the 2 sets of Angle Metal with screw as shown in Fig. 10.
Step 2: Remove the 2 screws for backlights as shown in Fig. 10. to release them.
Step 3: Carefully draw out the connectors to J2 and J3 through the holes of the frame.
Step 4: Pull out the top and bottom backlights by hands as shown in Fig. 11.

Fig. 8

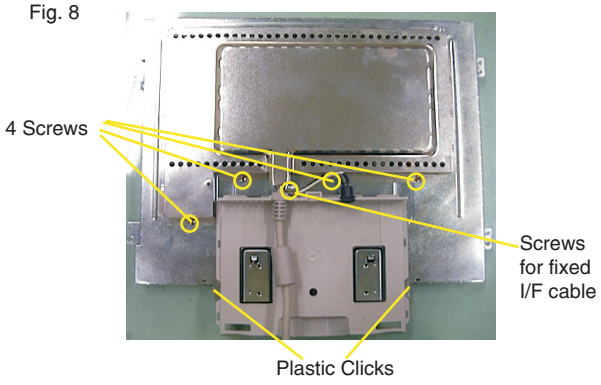


Fig. 9

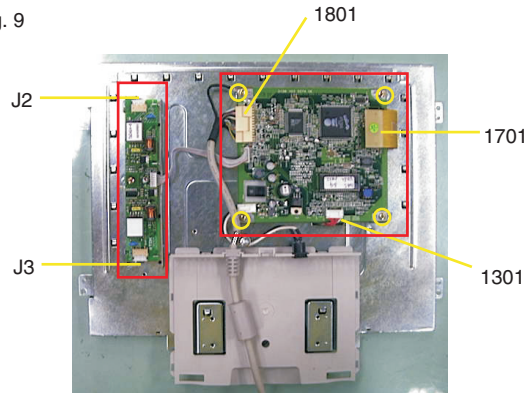


Fig. 10

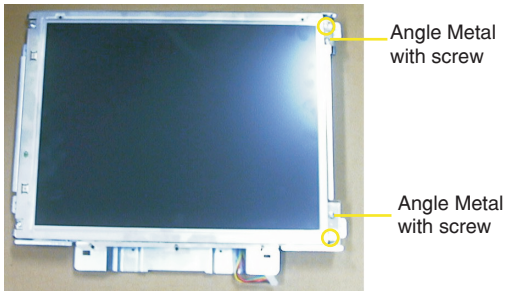
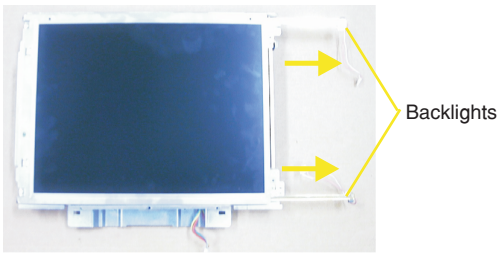


Fig. 11



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Electrical instructions

0. General

When carry-out the electrical settings in many cases a video signal must be applied to the monitor. A computer with :

- ATI VGA 1024 V6-1.04/PH BETA4 interface card
- PGA 1024 (4822 212 30916), Mach 8.
- PGA 1280 (4822 212 30917), Mach 32.
- ATI GPT-1600 (4822 397 10065), Mach 64 (up to 107kHz)

are used as the video signal source. The signal patterns are selected from the "service test software" package, see user guide 4822 727
19896 (ATI1024), or 4822 727 20273 (PGA 1280), or
4822 727 21046 (GPT-1600).

0.1 With normal VGA card:
If not using the ATI card during repair or alignment, The service engineer also can use this service test software adapting with normal standard VGA adaptor and using standard VGA mode 640 x 480, 31.5 kHz/60 Hz (only) as signal source.

0.2 AC/DC Measurement:
The measurements for AC waveform and DC figure is based on 640 x 480 31.5 kHz/60 Hz resolution mode with test pattern "gray scale".

1.General points

1.1 During the test and measuring, supply a distortion free AC mains voltage to the apparatus via an isolated transformer with low internal resistance.

1.2 All measurements mentioned hereafter are carried out at a normal mains voltage (90 - 132 VAC for USA version, 195 -264 VAC for EUROPEAN version, or 90 - 264 VAC for the model with full range power supply, unless otherwise stated.)

1.3 All voltages are to be measurement or applied with respect to ground, unless otherwise stated. Note: don't use heat-sink as ground.

1.4 The test has to be done on a complete set including LCD panel in a room with temperature of 25 +/- 5 degree C.

1.5 All values mentioned in these test instruction are only applicable of a well aligned apparatus, with correct signal.

1.6 The letters symbols (B) and (S) placed behind the test instruction denotes
(B): carried out 100% inspection at assembly line
(S): carried out test by sampling

1.7 The white balance (color temperature), has to be tested in subdued lighted room.

1.8 Repetitive power on/off cycle are allowed except it should be avoided within 6 sec.

2. Input signal

2.1 Signal type
Video : 0.7 Vp-p linear, positive polarity
Sync. : TTL level, separate, positive or negative polarity
Signal source: pattern generator format as attachment.
(table 1 to 14) Reference generator : CHROMA 2200 or 2250

2.2 Input signal mode

Factory preset video resolution

Dot rate (MHz)	H.freq (KHz)	Mode	Resolution	V.freq (Hz)
25.175	31.469	IBM VGA 10h	640 * 350	70.087
28.322	31.469	IBM VGA 3h	720 * 400	70.087
25.175	31.469	IBM VGA 12h	640 * 480	59.940
30.240	35.000	MACINTOSH	640 * 480	66.667
31.500	37.861	VESA	640 * 480	72.809
31.500	37.500	VESA	640 * 480	75.000
36.000	35.156	VESA	800 * 600	56.250
40.000	37.879	VESA	800 * 600	60.317
50.000	48.077	VESA	800 * 600	72.188
49.500	46.875	VESA	800 * 600	75.000
57.300	49.700	MACINTOSH	832 * 624	75.000
65.000	48.363	VESA	1024 * 768	60.004
75.000	56.476	VESA	1024 * 768	70.069
78.750	60.023	VESA	1024 * 768	75.029

3. AC Adaptor

3.1Setup the AC I/P at 90VAC, and Output DC loading at 3 Amp, The DC output voltage is 18 V

3.2 There is not necessary to perform any adjustment for power section.

4. Display Adjustment

4.1Input signals check
In factory mode, use 64 gray level and set the R,G,B sub gain to 100%.

4.2 Display quality test
Use timing mode as described in 2.2, and use the POPO (pixel on pixel off) pattern to adjust the clock until no stripe and adjust the phase until clear picture. Check all pre-setting 14 modes.

4.3 Check of WHITE-D (B)
Apply a 48.36kHz/60Hz signal with white pattern, set brightness control at 100%, and contrast control at 50%. Adjust the R, G, B sub_gain, for the screen center, the 1931 CIE chromaticity (X, Y) co-ordinates shall be;

	9300°K	6500°K
x (center)	0.281 ±0.02	0.312 ±0.02
y (center)	0.311 ±0.02	0.338 ±0.02

Use Minolta CA-110 for color coordinates and luminance check.
Luminance; 250 Nits (LG) in the center of the screen.

4.4 Check the digital interface
Set the delay time to be 6 nsec.
Check the 64 gray level color poor & noise condition.

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Electrical instructions

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TIMING FOR 140S 14" TFT XGA COLOR LCD MONITOR
(VESA monitor timing standard Version 1.0 Release 0.7)

REFERENCE PATTERN GENERATOR : CHROMA 2200 or2250

TABLE 1: 31.469 KHz/70.087Hz, 640 X 350, pixel=25.175 MHz

Horizontal			Vertical		
Frame border	=	0	Frame border	=	0
Total size	=	31.778 us	Total size	=	14.268 ms
Display size	=	25.422 us	Display size	=	11.122 ms
Rear porch	=	1.907 us	Rear porch	=	1.907 ms
Sync width	=	3.813 us	Sync width	=	0.064 ms
Sync polarity	=	+	Sync polarity	=	-

TABLE 2: 31.469 KHz/70.087Hz, 720 X 400, pixel=28.322 MHz

Horizontal			Vertical		
Frame border	=	0	Frame border	=	0
Total size	=	31.778 us	Total size	=	14.268 ms
Display size	=	25.422 us	Display size	=	12.711 ms
Rear porch	=	1.907 us	Rear porch	=	1.112 ms
Sync width	=	3.813 us	Sync width	=	0.064 ms
Sync polarity	=	-	Sync polarity	=	+

TABLE 3: 31.469 KHz/59.940Hz, 640 X 480, pixel=25.175 MHz

Horizontal			Vertical		
Frame border	=	0	Frame border	=	0
Total size	=	31.778 us	Total size	=	16.683 ms
Display size	=	25.422 us	Display size	=	15.253 ms
Rear porch	=	1.907 us	Rear porch	=	1.049 ms
Sync width	=	3.813 us	Sync width	=	0.064 ms
Sync polarity	=	-	Sync polarity	=	-

TABLE 4: 35.000 KHz/66.667Hz, 640 X 480, pixel=30.240 MHz

Horizontal			Vertical		
Frame border	=	0	Frame border	=	0
Total size	=	28.571 us	Total size	=	15.000 ms
Display size	=	21.164 us	Display size	=	13.714 ms
Rear porch	=	3.175 us	Rear porch	=	1.114 ms
Sync width	=	2.116 us	Sync width	=	0.086 ms
Sync polarity	=	-	Sync polarity	=	-

TABLE 5: 37.861 KHz/72.809Hz, 640 X 480, pixel=31.500 MHz

Horizontal			Vertical		
Frame border	=	0	Frame border	=	0
Total size	=	26.413 us	Total size	=	13.735 ms
Display size	=	20.317 us	Display size	=	12.678 ms
Rear porch	=	4.064 us	Rear porch	=	0.739 ms
Sync width	=	1.270 us	Sync width	=	0.079 ms
Sync polarity	=	-	Sync polarity	=	-

TABLE 6: 37.500 KHz/75.000Hz, 640 X 480, pixel=31.500 MHz

Horizontal			Vertical		
Frame border	=	0	Frame border	=	0
Total size	=	26.667 us	Total size	=	13.333 ms
Display size	=	20.317 us	Display size	=	12.800 ms
Rear porch	=	3.810 us	Rear porch	=	0.427 ms
Sync width	=	2.032 us	Sync width	=	0.080 ms
Sync polarity	=	-	Sync polarity	=	-

TABLE 7: 35.156 KHz/56.250Hz, 800 X 600, pixel=36.000 MHz

Horizontal			Vertical		
Frame border	=	0	Frame border	=	0
Total size	=	28.444 us	Total size	=	17.778 ms
Display size	=	22.222 us	Display size	=	17.067 ms
Rear porch	=	3.556 us	Rear porch	=	0.626 ms
Sync width	=	2.000 us	Sync width	=	0.057 ms
Sync polarity	=	+	Sync polarity	=	+

TABLE 8: 37.879 KHz/60.317Hz, 800 X 600, pixel=40.000 MHz

Horizontal			Vertical		
Frame border	=	0	Frame border	=	0
Total size	=	26.400 us	Total size	=	16.579 ms
Display size	=	20.000 us	Display size	=	15.840 ms
Rear porch	=	2.200 us	Rear porch	=	0.607 ms
Sync width	=	3.200 us	Sync width	=	0.106 ms
Sync polarity	=	+	Sync polarity	=	+

TABLE 9: 48.077 KHz/72.188Hz, 800 X 600, pixel=50.000 MHz

Horizontal			Vertical		
Frame border	=	0	Frame border	=	0
Total size	=	20.800 us	Total size	=	13.853 ms
Display size	=	16.000 us	Display size	=	12.480 ms
Rear porch	=	1.280 us	Rear porch	=	0.478 ms
Sync width	=	2.400 us	Sync width	=	0.125 ms
Sync polarity	=	+	Sync polarity	=	+

TABLE 10: 46.875 KHz/75.000Hz, 800 X 600, pixel=49.500 MHz

Horizontal			Vertical		
Frame border	=	0	Frame border	=	0
Total size	=	21.333 us	Total size	=	13.333 ms
Display size	=	16.162 us	Display size	=	12.800 ms
Rear porch	=	3.232 us	Rear porch	=	0.448 ms
Sync width	=	1.616 us	Sync width	=	0.064 ms
Sync polarity	=	+	Sync polarity	=	+

TABLE 11: 49.722 KHz/74.546Hz, 832 X 624, pixel=57.280 MHz

Horizontal			Vertical		
Frame border	=	0	Frame border	=	0
Total size	=	20.110 us	Total size	=	13.410 ms
Display size	=	14.520 us	Display size	=	12.550 ms
Rear porch	=	3.910 us	Rear porch	=	0.784 ms
Sync width	=	1.117 us	Sync width	=	0.060 ms
Sync polarity	=	+	Sync polarity	=	+

TABLE 12: 48.363 KHz/60.004Hz, 1024 X 768, pixel=65.000 MHz

Horizontal			Vertical		
Frame border	=	0	Frame border	=	0
Total size	=	20.677 us	Total size	=	16.666 ms
Display size	=	15.754 us	Display size	=	15.880 ms
Rear porch	=	2.462 us	Rear porch	=	0.600 ms
Sync width	=	2.092 us	Sync width	=	0.124 ms
Sync polarity	=	-	Sync polarity	=	-

TABLE 13: 56.476 KHz/70.069Hz, 1024 X 768, pixel=75.000 MHz

Horizontal			Vertical		
Frame border	=	0	Frame border	=	0
Total size	=	17.707 us	Total size	=	14.272 ms
Display size	=	13.653 us	Display size	=	13.599 ms
Rear porch	=	1.920 us	Rear porch	=	0.513 ms
Sync width	=	1.813 us	Sync width	=	0.106 ms
Sync polarity	=	-	Sync polarity	=	-

TABLE 14: 60.023 KHz/75.029Hz, 1024 X 768, pixel=78.750 MHz

Horizontal			Vertical		
Frame border	=	0	Frame border	=	0
Total size	=	16.660 us	Total size	=	13.328 ms
Display size	=	13.003 us	Display size	=	12.795 ms
Rear porch	=	2.235 us	Rear porch	=	0.466 ms
Sync width	=	1.219 us	Sync width	=	0.050 ms
Sync polarity	=	+	Sync polarity	=	+

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Colour Adjustment

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LCD COLOUR ANALYZER - CA110

1. SUMMARY

The LCD Colour Analyzer CA-110 was designed to upgrade the white-balanceprocess on production lines for colour LCD televisions and computer colour LCD panels in the colour LCD industry. The CA-110 consists of a main unit and a measuring probe.
The measuring probe utilizes an optical system suitable for measurement of colour LCDs and is equipped with a viewfinder to verify the area to be measured.

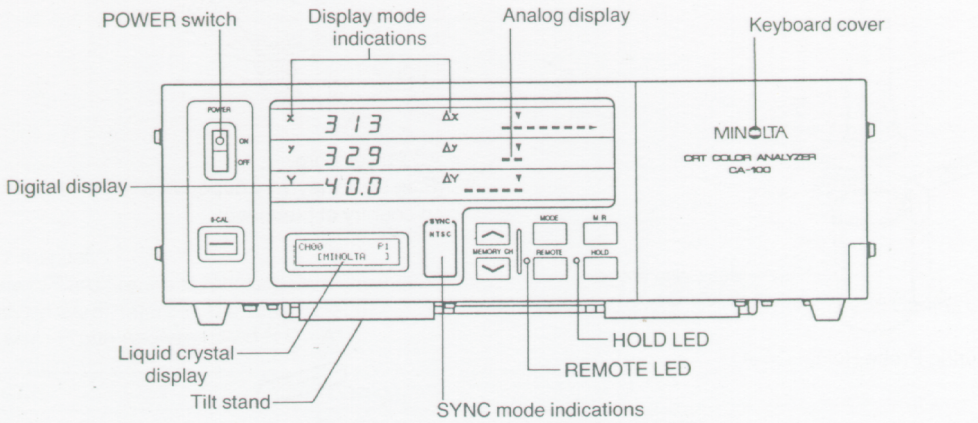
2. APPLICATIONS

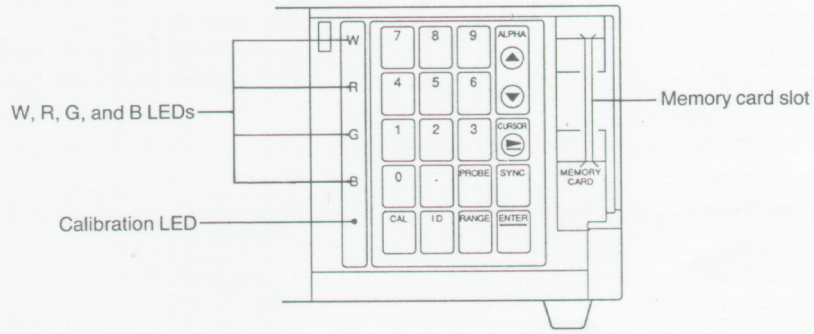
* White-balance adjustment and inspection on LCD production lines.
* Quality control and shipping inspection by LCD manufacturers.
* Inspection of LCDs upon receipt by computer manufacturers.

NAMES OF PARTS

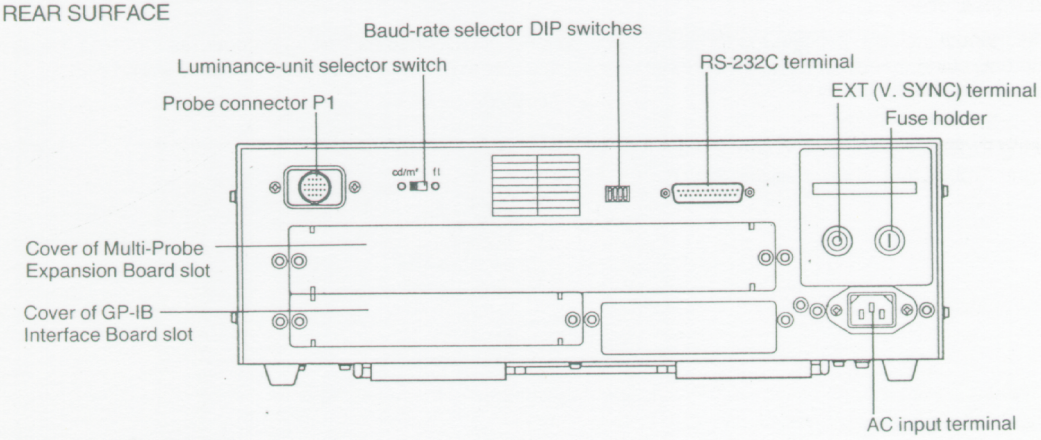
Main Unit

FRONT SURFACE





REAR SURFACE



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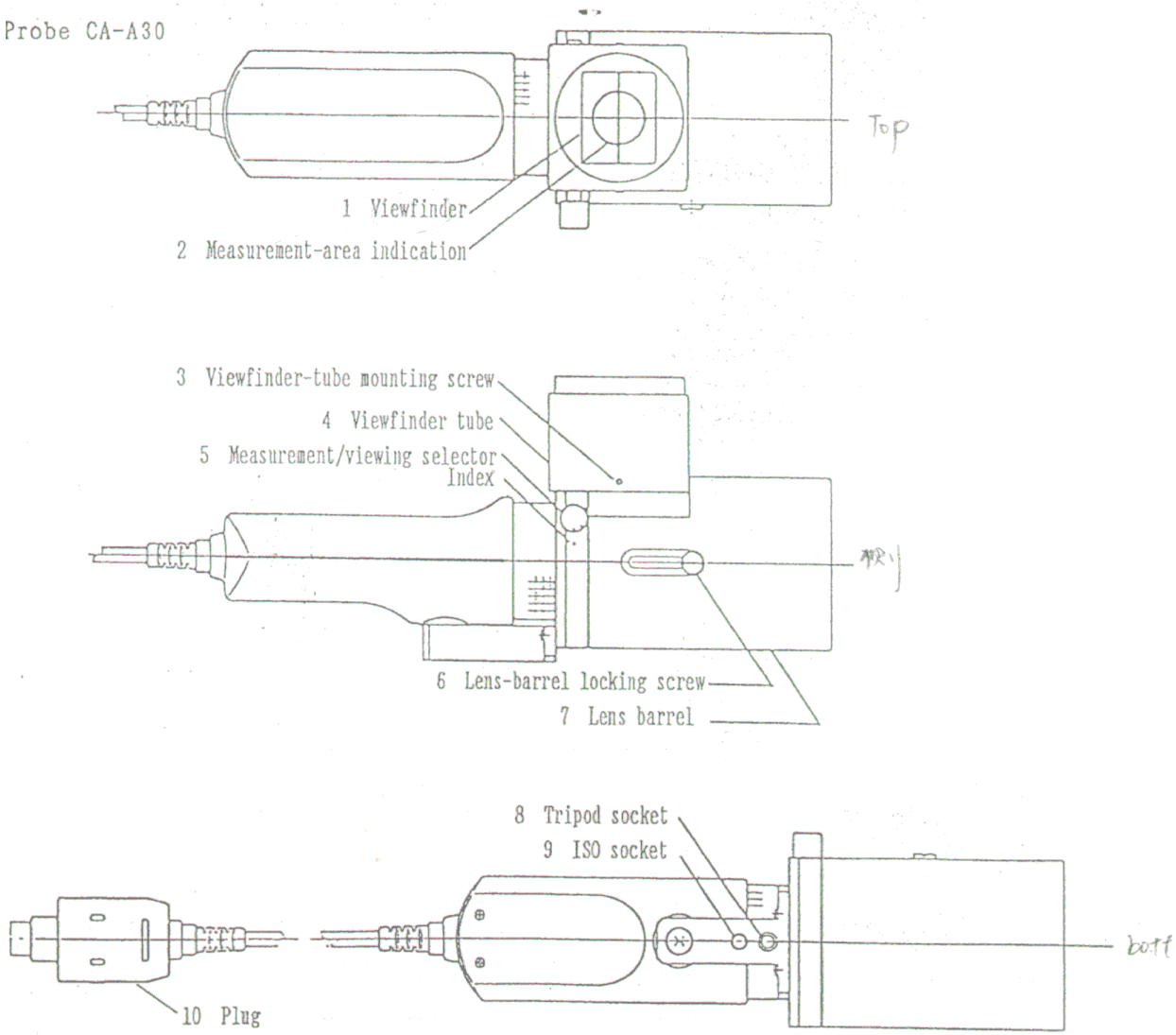

1.	Viewfinder	Shows image seen by measuring probe.
2.	Measurement-area indication	Indicates area to be measured.
3.	Viewfinder-tube mounting screw	Removing these two screws (one on each side) allows the viewfinder tube to be removed to clean viewfinder, etc.
4.	Viewfinder tube	Can be moved to minimize the effects of surrounding light and provide the best view of the viewfinder image.
5.	Measurement/viewing selector	Moves internal mirror; set to ○ for measurement and to ● for viewing or for zero calibration.
6.	Lens-barrel locking screw	Locks lens barrel at a fixed position.
7.	Lens barrel	Can be moved back and forth to set measurement angle.
8.	Tripod socket	Can be used to mount measurement probe on a tripod. Depth: 6mm.
9.	ISO socket	Can be used to mount measurement probe. ISO Ø5mm, depth: 6mm
10.	Plug	Used to connect measuring probe to main unit or optional Multi-Probe Expansion Board.

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Colour Adjustment

ZERO CALIBRATION

Zero calibration is performed to determine the output of the measuring probe when no light reaches the sensor and to set this as the zero point to which all other measurements are referenced. Zero calibration must be performed after the POWER switch has been set ON brfore taking any measurements.

To perform zero calibration :

* Before performing zero calibration, check that the measuring probe has been connected to probe connector P1.

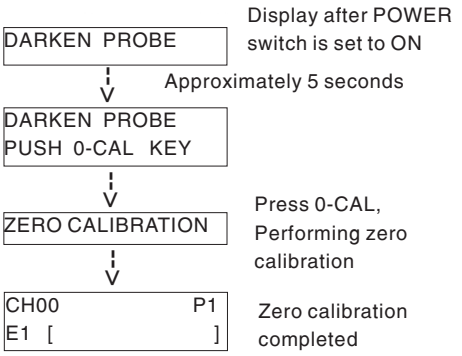
1. Check that the POWER switch is set to ON.

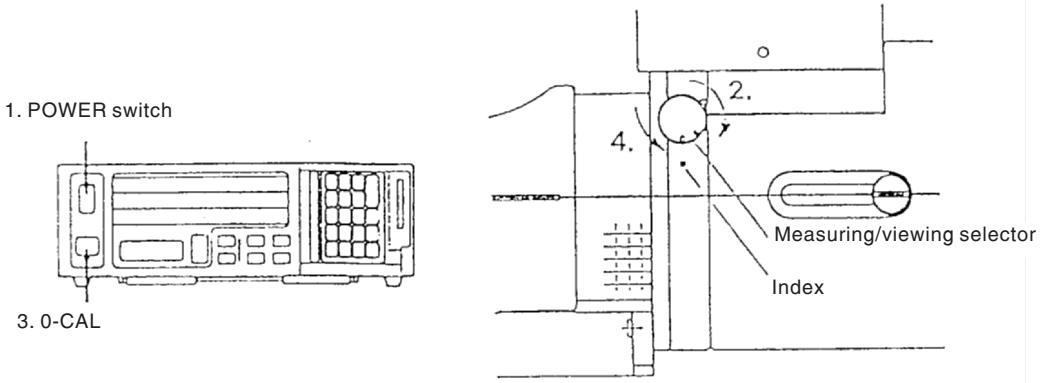
2. Set the measuring/viewing selector to the (viewing) position. (An image can be seen in the viewfinder, but no light will reach the sensor.)

3. Press 0-CAL.

   * If zero calibration is being performed immediately after the POWER switch has been set to ON, press 0-CAL after "PUSH 0-CAL KEY" appears in the liquid crystal display.

4. Set the measuring/viewing selector to the position. Measurements will be started immediately.





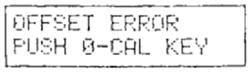
- "E1" will appear in the liquid crystal display the first time the CA-110 is used after shipment because no standard color has been set.
- Zero calibration can be performed at any time, even if "PUSH 0-CAL KEY" is not shown in the liquid crystal display.

Note:

- If the luminance of the LCD to be measured is 5.00cd/m² (1.46 fL) or less, wait at least five minutes after setting POWER switch to ON before performing zero calibration. Also, when measuring LCDs of low luminance, zero calibration should be performed approximately once an hour to ensure accuracy.
- If the ambient temperature changes after zero calibration has been performed, perform zero calibration again.
- Do not press any key while zero calibration is being performed. If a key is pressed, the time required for zero calibration will become longer.

To check if zero calibration was performed correctly, place the receptor area of the probe face down on a flat surface so that no light reaches the receptor area.

If the display shown at right appears in the liquid crystal display, perform zero calibration again.



- Even when "OFFSET ERROR" appears in the liquid crystal display, if light reaches the receptor area of the measuring probe, measured values will appear in the digital and analog displays. However, these values will not be accurate.

If any other display is shown, zero calibration was performed correctly.

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SETTING MEASUREMENT AREA

Measurement areas of Ø25mm and Ø50mm can be selected by extending or retracting the lens barrel. The Ø25mm measurement area can be used for measuring LCDs with 2 - inch or greater diagonals: the Ø50mm measurement area can be used for measuring LCDs with 4 - inch or greater diagonals.

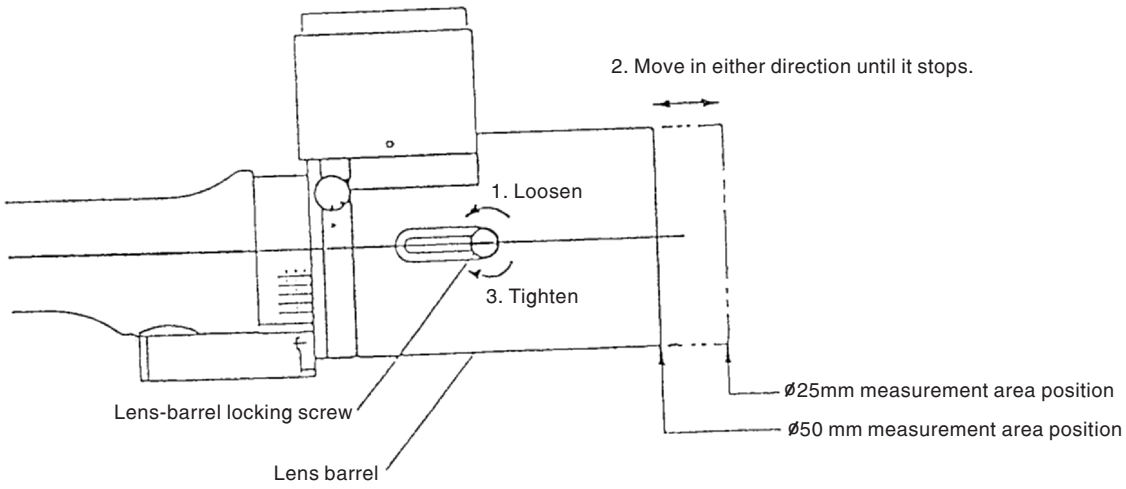
Set the measurement area :

Using a slotted screwdriver, loosen the lens - barrel locking screw.

Slide the lens barrel to the position corresponding to the desired measurement area. The lens barrel should be slid in the desired direction until it stops.
Extending the lens barrel fully sets the Ø25mm measurement area: retracting the lens barrel fully sets the Ø50mm measurement area.

Use the screwdriver to tighten the lens - barrel locking screw and lock the lens barrel in position.

Changing the measurement area also changes the measurement angle. this may result in differences between values measured with the Ø25mm measurement area and those measured with the Ø50mm measurement area to the viewing - angle characteristics of the LCD. For this reason. it is recommended that the measement area be constant for all measements.



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Colour Adjustment

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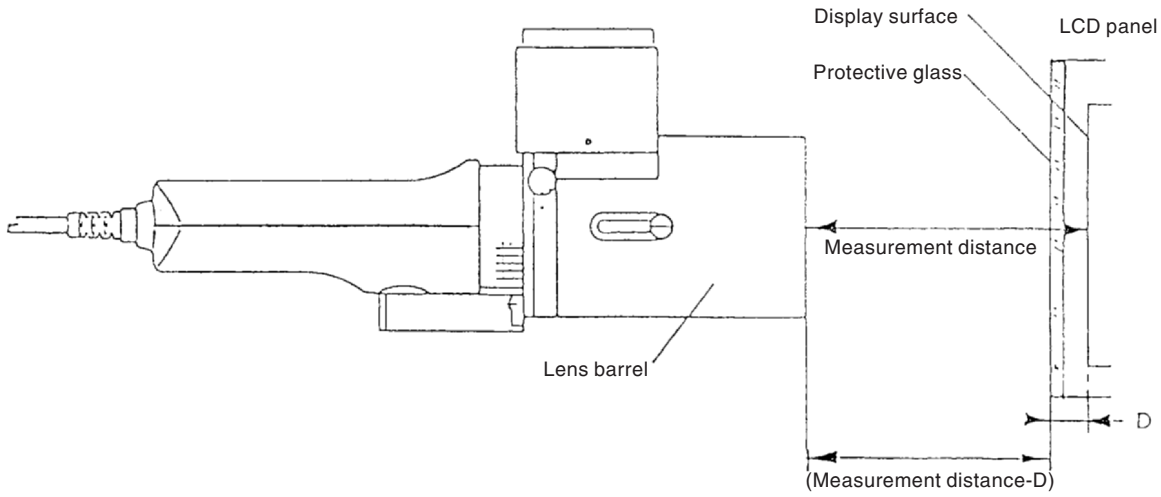
SETTING MEASUREMENT DISTANCE

The measurement distance (the distance from the front of the measuring probe's lens barrel to the display surface of the LCD) should be set using a ruler according to the procedure below.

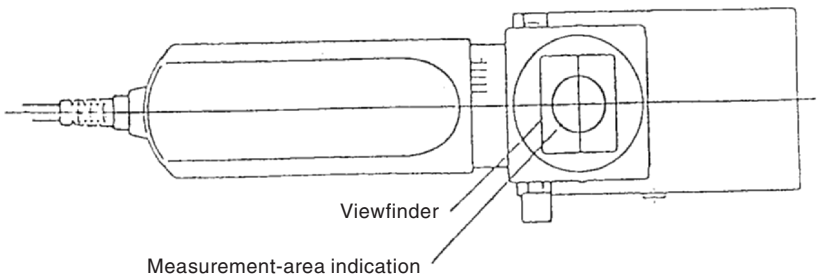
1. Mount the measuring probe on a tripod or other stand and mount the LCD on a suitable stand.
2. While using a ruler to measure the distance from the front of the measuring probe's lens barrel to the LCD's display surface, move the measuring probe or the LCD until the distance is the correct distance for the measurement area in use.

measurement area	ø 25mm	ø 50mm
measurement distance*	135mm+/-5mm	210mm+/-10mm

* Distance from the tip of the measuring probe's lens barrel to the LCD's display surface.



3. While looking through the viewfinder, move the measuring probe or LCD until the LCD section to be measured is inside the measurement-area indication in the viewfinder.



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Colour Adjustment

White Balance Adjustment

Alignment procedure

1. Turn on 140S LCD monitor.
2. Turn on the Timing/Pattern generator. See Fig. 1
   Setting generator to provide CROSS-Hatch pattern at
   Resolution : 1024 x 768
   Timing : H= 60 KHz
   V= 75 Hz

3. Preset LCD colour Analyzer CA-110
   - Remove the lens protective cover of probe CA-A30.
   - Set “Measuring/viewing selector” to Measuring position for reset analyzer. (Zero calibration) as Fig. 2
   - Turn on the colour analyzer (CA-110).
   - Press “0-CAL” button to starting reset analyzer. See Fig. 3

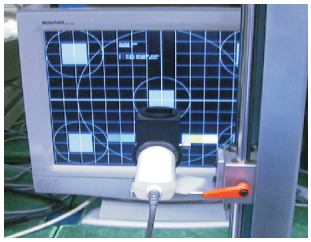


Fig. 1

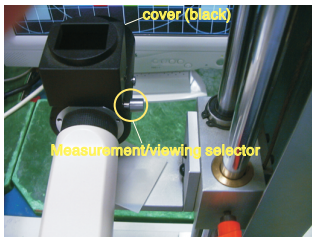


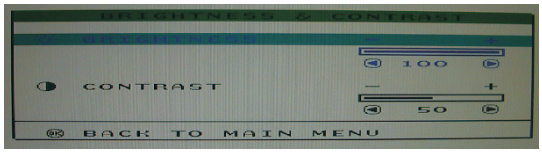
Fig. 2

Fig. 3

4. Entering factory adjustment mode of LCD Monitor.
   - To hold OK and AUTO buttons then power on the monitor. Press OK to bring up OSD menu for confirmation as below:

Note : after alignment, please reset the power of LCD monitor to return to user mode for normal operation.

5. Adjust OSD menu to lower position of screen (i.e. adjust V-position to value "0" at submenu of OSD Setting.
6. Setting Brightness and Contrast
   - Adjust Brightness to value "100"".
   - Adjust Contrast to value “"50"".



7. Switch light probe to "Viewing"" position.
8. Move the "Lens barrel" forward or backward to get clear image as shown in Fig. 4
9. Switch light probe to "Measuring" position. It should be able to indicate colour value on the CA-110.

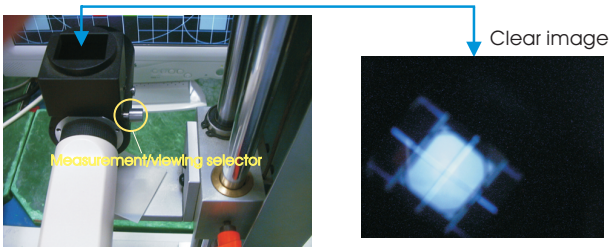
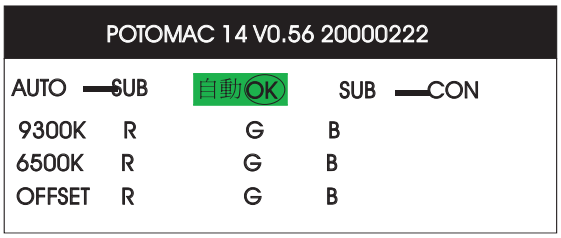


Fig. 4

10. Setting pattern to full white picture.
11. Press OK then select“pPOTOMAC 14 V0.56 20000222” by ▼ button.
12. Press OK to bring up submenu as following windows.



9300°K

13. Press ▲ or ▼ buttons to select R G B.Increase/decrease value by press ◀ or ▶ buttons until the X, Y co-ordinates as below:

    x= 0.281 ±0.005
    y= 0.311 ±0.005
    Y>= 170 nits (Chi Mei LCD panel)

6500°K

14. Setting X, Y value listed as below:

    X= 0.312 ±0.005
    Y= 0.338 ±0.005
    Y>= 170 nits

Alignment hits: 1. R for x value , G for y value, B for Y value on the colour analyzer.
2. If the colour analyzer has been calibrated and preset colour temperature in it. Please switch to correct setting in accordance with colour settings.

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Colour Adjustment

11. Gray scale checking
    - Switch Timing/pattern generator to
      Pattern: 64 gray scale
      Timing: 1024 X 768 75Hz 60KHz
    - Setting both Brightness and Contrast to 50 (Value).
    - Check black and white scale are visible clearly across the screen.
      See Fig. 1

Fig. 1

Note: The bright scale will be saturated, if Y is too large. The dark scale will be invisible, if Y is too small. Re-alignment or review procedure again to correct this.

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DDC Instructions

1. General

DDC Data Re-programming

In case the DDC data memory IC or main EEPROM which storage all factory settings were replaced due to a defect, the serial numbers have to be re-programmed.

It is advised to re-soldered DDC IC and main EEPROM from the old board onto the new board if circuit board have been replaced, in this case the DDC data does not need to be re-programmed.

Additional information

Additional information about DDC (Display Data Channel) may be obtained from Video Electronics Standards Association (VESA). Extended Display Identification Data(EDID) information may be also obtained from VESA.

DDC EDID structure
For Analog interface: Standard Version 3.0
Structure Version 1.2
For Digital inferface: Standard Version 3.0
Structure Version 1.3

2. System and equipment requirements

1. An i486 (or above) personal computer or compatible.
2. Microsoft operation system Windows 95/98.
3. EDID30.EXE program (3138 106 10075) shown as Fig. 1
4. A/D Alignment kits (3138 106 10079) shown as Fig. 2. This kit contents: a. Alignment box x1
   b. Printer cable x1
   c. D-Sub cable x1
   d. (DVI-D) to (D-Sub) cable x1

Note: The EDID30.EXE (Release Version 1.5 1999.11.17)is a windows-based program, which cannot be run in MS-DOS. Meanwhile, it is also fully compatible with previous programs DDCV2X.EXE series(MS-DOS based).

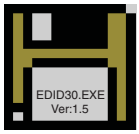


Figure 1 Diskette with EDID30.EXE

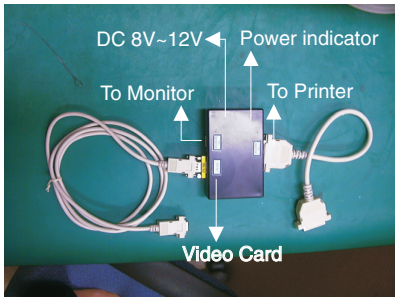
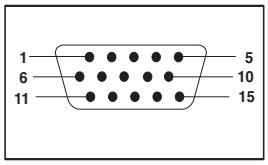


Fig. 2 A/D Alignment Kits

Note: The alignment box has already build-in a batteries socket for using batteries (9V) as power source. Pull out the socket by remove four screws at the rear of box. Please do not forget that remove batteries after programming. The energy of batteries can only drive circuits for a short period of time.

3. Pin assignment

A. 15-pin D-Sub Connector



Pin No.	Assignment	Pin No.	Assignment
1	Red video input	9	+5V
2	Green video input	10	Ground
3	Blue video input	11	Ground
4	Ground	12	Serial data line(SDA)
5	No Connected	13	H.Sync
6	Red video ground	14	V.Sync(VCLK for DDC)
7	Green video ground	15	Data clock line(SCL)
8	Blue video ground		

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DDC Instructions

4. Configuration and procedure

There are three chips contained serial number on the circuit board, Analog DDC IC (7202), Digital DDC IC (7201) and main EEPROM (7362) which storage all factory settings. Following descirptions are the connection and procedure for Analog DDC IC and Digital DDC IC, the main EEPROM can be re-programmed along with Analog IC by enable “factory memory data write” function on the DDC program (EDID30.EXE).

Initialize alignment box

In order to avoid that monitor entering power saving mode due to sync will cut off by alignment box, it is necessary to initialize alignment box before running programming software (EDID30.EXE). Following steps show you the procedures and connection.

Step 1: Supply 8~12V DC power source to the Alignment box by plugging a DC power cord or using batteries.
Step 2: Connecting printer cable and video cable of monitor as Fig. A
Step 3: Run the EDID30.EXE program until the main menu appears. This is for initialize alignment box.

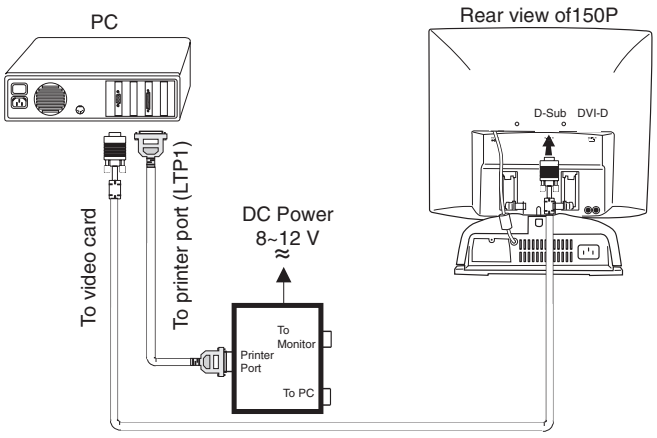


Fig. A

Re-programming Analog DDC IC

Step 1: After initialize alignment box, connecting all cables and box as Fig. 3
Step 2: Follow the steps on DDC re-programming instructions to staring re-programming.

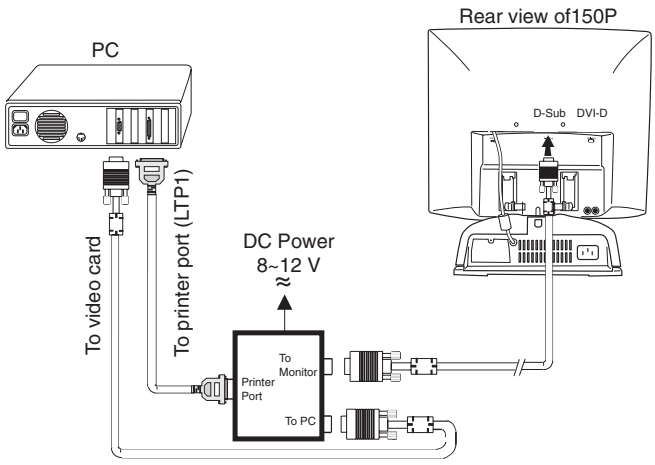
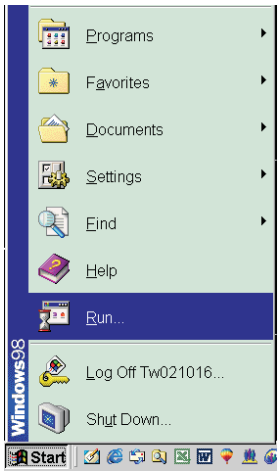


Fig. 3

5. DDC re-programming instructions

Start on DDC program

Start Microsoft Windows.
1. Insert the disk containing EDID30.EXE program into floppy disk drive.
2. Click Start , choose Run at start menu of Windows 95/98.



4. At the submenu, type the letter of your computer’s floppy disk drive followed by :EDID30 (for example, A:\EDID30, as shown in Fig. 5).

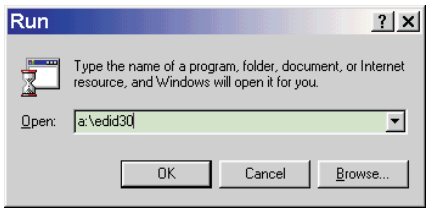


Fig. 5

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5. Click OK button. The main menu appears (as shown on Fig. 6).

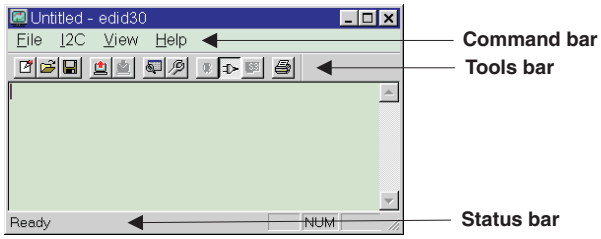
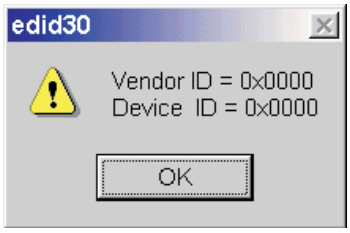


Fig. 6

Note: If the connection is improper, you will see the following error message before entering the main menu. Meanwhile, the (read EDID) function will be disable. At this time, please make sure all cables are connected correctly and fixedly, and the procedure has been performed properly.



Loading DDC data from monitor

1. Click icon on the tools bar to bring up the Configuration Setup windows as Fig.7
2. Select the DDC2B as the communication channel.
3. Enable Factory memory data write function and fill in page address "F0" to the block.
4.. Click OK button to confirm your selection.

Note: The Factory memory data write function will allow EDID30 to rewrite serial numbers both Analog DDC IC and main EEPROM to make sure both S/N are exactly the same. You may confirm the function by checking the S/N at Product information of the OSD menu after restarting the monitor.

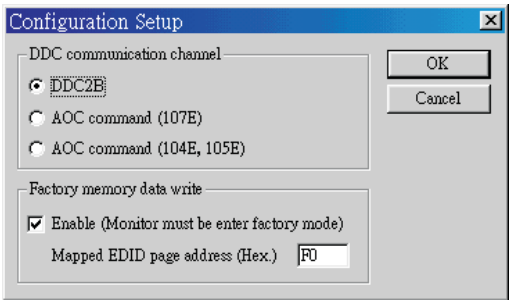
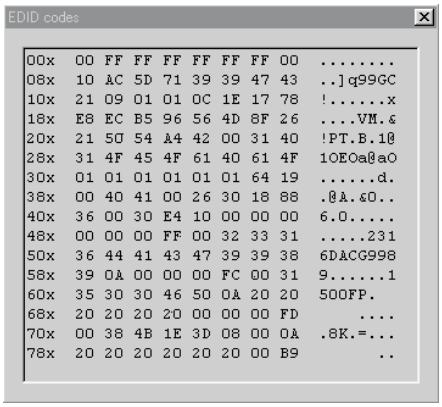


Fig. 7

4. Click icon to read DDC EDID data from monitor. The EDID codes will display on screen as following. (The EDID codes are depend on the model.) Meanwhile, The status bar will indicate 00% to 100% when reading.



Note: During the loading, EDID30 will verify the EDID data which just loaded from monitor before proceed any further function, once the data structure of EDID can not be recognized, the following error message will appear on the screen (Fig. 8). Please confirm following steps to avoid this message.
1. The data structure of EDID was incorrect.
2. DDC IC that you are trying to load data is empty.
3. Wrong communication channel has set at configuration setup windows.
4. Cables loosed or poor contact of connection.

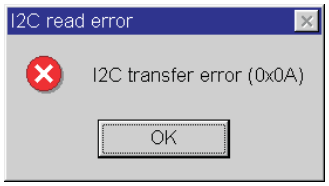
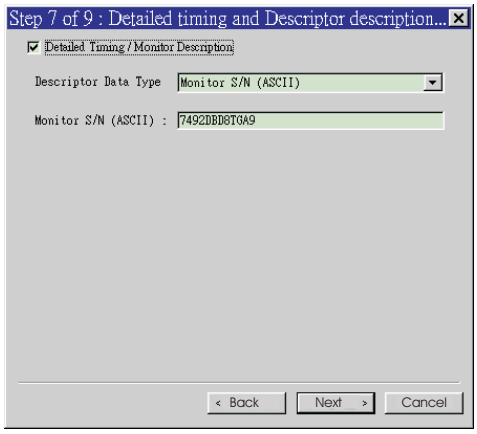


Fig. 8

Modify DDC data (Serial No.)

1. Click icon on the toosl bar.
2. Click Next > till the Step 7 of 9 window appears.
3. Type the new Serial No. (for example, 7492DBD8TGA9).
4. Click Next > till the last step window appears, then click Finish to exit the Step window.



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DDC Instructions

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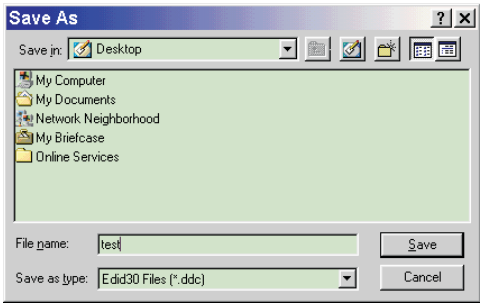
Write DDC data to monitor

1. Click icon from the tools bar to starting rewrite DDC data.
2. Click for confirmation.

Save DDC data as a file

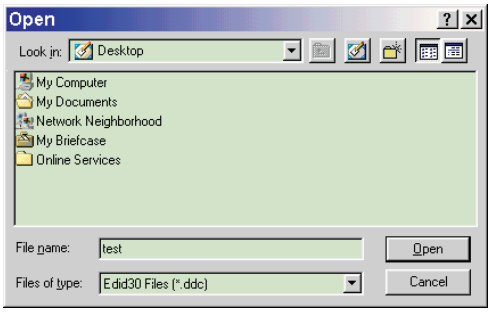
Sometimes, you maybe need to save DDC data as a text file for using on other DDC chip. To save DDC data, follow the steps below:

1. Click icon on the tools bar and type a file name you like. The file format is ddc type which can be open by Microsoft WordPad.
2. Click Save button.



Load DDC data from file

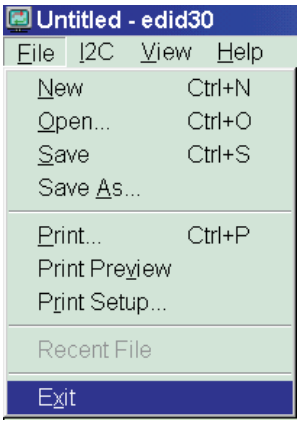
1. Click from the tools bar.
2. Select the file you want to open.
3. Click Open Button.



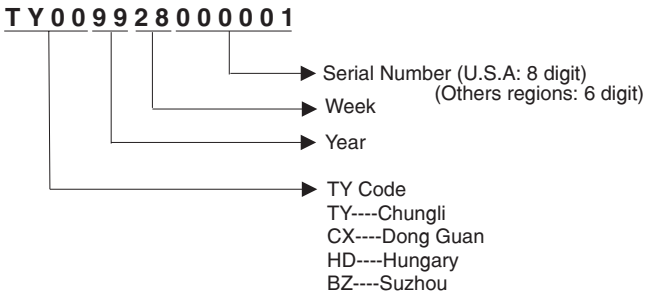
4. Now you can re-programming DDC data which you just loaded from a file, please be confirmed that model and serial number are correct and match with the monitor you are trying to re-write.

Exit DDC program

1. Click file command on the command bar then select Exit.



Definition of Serial Number



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Spare parts list

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ITEM	CODE NUMBER	DESCRIPTION
1	3138 103 52751	MAIN PCB-MULTI
1	3138 103 53131	FRONT PANEL PCB-MULTI
1	3138 157 50701	BACK COVER ASSY
2	3138 157 50691	CONTROL KNOB ASSY
3	3138 157 50681	BASE ASSY
18	3138 154 00971	GASKET-V L EQU.TO 25MM
21	3138 157 50671	HINGE ASSY
41	3138 154 01441	FRONT CABINET
43	3138 154 01461	REAR COVER
44	3138 154 01511	CAP
45	3138 154 01471	RECESS-COVER
46	3138 104 45691	HOUSING COVER
47	3138 154 01451	BACK COVER
48	3138 154 01481	CONTROL KNOB
49	3138 154 01491	POWER KNOB
50	3138 154 01521	BASE
50	3138 154 01501	LENS-POWER
51	3138 154 01531	HINGE BASE
52	3138 154 01541	ROTATE HOLDER
54	3138 104 50161	RUBBER PAD
71	3138 151 30651	FRAME-SHIELD-CHI MEI
72	3138 151 30661	EMI SHIELD
73	3138 151 30761	SPRING GROUND-TOP
74	3138 151 30771	SPRING GROUND-L/R
75	3138 151 30781	SPRING GROUND-BOTTOM
76	3138 151 30481	PLATE-VESA
77	3138 151 30711	LOCK PLATE
78	3138 151 60501	SPRING-POWER KNOB
79	3138 151 30701	PLATE-WEIGHT
83	3138 151 60541	ARMS-L
84	3138 151 60551	ARMS-R
85	3138 150 40011	WASHER-HINGE
86	3138 150 40021	SPRING-WASHER
87	3138 150 40031	ANGLE-WASHER
88	3138 150 40041	NUT-M6
89	3138 150 40051	SHAFT-M6
90	3138 150 40061	C-RING
131	0638 995 00005	60/40 NRG SOLDER WR 0.05
131	0638 995 00005	60/40 NRG SOLDER WR 0.05
132	0611 059 00002	EXTRUDED BAR
132	0611 059 00002	EXTRUDED BAR
133	1322 511 49002	ISOPROPANOL COLOURLESS
133	1322 511 49002	ISOPROPANOL COLOURLESS
134	1322 526 43001	FLUX SOLD ALPHA RF800 B
134	1322 526 43001	FLUX SOLD ALPHA RF800 B
135	0638 995 00006	60/40 NRG SOLDER WIRE 0.062
135	0638 995 00006	60/40 NRG SOLDER WIRE 0.062
137	1322 526 97902	SOLD PASTE LR735 SN62/36/2 1KG
138	0622 337 00001	SOLDER WIRE 63/37 .64MM
151	2838 062 90083	RUBBER BAND
152	3138 153 20071	EXSICCATOR
153	8238 277 03271	3M MASKING TAPE
154	3138 103 22581	SILICON RUBBER (19X19 mm)

ITEM	CODE NUMBER	DESCRIPTION
171	2822 062 40595	INK CARTRIDGE - EP-T
172	3138 106 00121	FAMILY SHEET - SERVICE
173	3138 106 00353	FAMILY SHEET
178	3138 155 20431	QUICK SETUP GUIDE
179	3138 155 20351	MANUAL-USING YOUR MONITOR
201	3138 155 50841	RATING LABEL
202	3138 105 84751	LABEL - MAINS CORD
203	3138 155 50851	PLASTIC COVER
204	3138 155 50562	PRODUCT TRACEABILITY LABEL
212	3138 155 50861	LABEL
213	3138 155 50861	LABEL
450	3138 156 30031	CARTON
451	3138 156 30011	CUSHION-FRONT
452	3138 156 30021	CUSHION-REAR
453	3138 156 20611	P.E.BAG-ANTI-STAT.
454	1222 100 33005	ADHESIVE TAPE 19 M/M
455	1238 100 78007	ADH TAPE PET 0.065X75
601	3138 117 02401	E-D.F.U. ASSY-140S
602	3138 117 01951	E-D.F.U.
615	3138 117 02361	HEX CODE F/W (NO MATL REQ.)
1002	2422 086 10929	FUSE SM SSQ F 5.0A 125V R
1051	2438 070 98032	MAINS CORD (220V)
1052	3138 168 77001	I/F CABLE (CE100902-0056510)
1053	3138 168 75781	AC ADAPTER
1061	8238 277 04641	LCD PANEL 14.1/0.279P/W/OF/TFT
1062	3138 188 04881	POTOMAC14 -ALL CHASSIS KITS
1063	8238 277 04901	INVERTER(POTOMAC CHI-MEI PANEL)
1064	8238 277 05501	FPC CABLE (TP-D20A)
1065	3138 168 77031	6P TO 7P WIRE (45992)
1066	3138 168 77021	DC POWER WIRE (45995)
1091	2438 031 00167	CON BM IC V 42P F 1.778 DIL B
1092	2438 031 00146	CON BM V 8P F 2.54 DIL B - Frank
1151	3138 158 51921	POTOMAC14 -MAIN PCB ASSY
1152	3138 158 51931	POTOMAC14 -CONTROL PCB ASSY
1301	3138 168 76621	7P WAFER L TYPE (633671)
1341	2438 543 00075	CRYSTAL 12MHZ SMD
1391	3138 158 51951	CPU WITH PROGRAM ASSY (7301)
1392	3138 158 51961	EEPROM IC ASSY (7362)
1701	8238 277 03381	CON. MOLEX-52760
1702	2722 171 08702	CRYSTAL-75MHZ OSC (DSO75ISB)
1801	2438 031 00059	CON BM H 13P B
1802	3138 108 75921	2-PIN FEMALE JUMPER
1803	2438 031 00343	HEADER 1X3
1901	3138 168 76631	6P WAFER L TYPE (612661)
1902	2438 128 00197	SWI TACT H 5 RD 260G SKHHAR B
1903	2438 128 00197	SWI TACT H 5 RD 260G SKHHAR B
1904	2438 128 00197	SWI TACT H 5 RD 260G SKHHAR B
1905	2438 128 00197	SWI TACT H 5 RD 260G SKHHAR B
1906	2438 128 00197	SWI TACT H 5 RD 260G SKHHAR B
1907	2438 128 00197	SWI TACT H 5 RD 260G SKHHAR B
1908	2422 128 02864	SWI PUSH ESB64623

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ITEM	CODE	NUMBER	DESCRIPT
2001	2238 580 16627	SMD0805X7R 0.01U 50V +-10
2002	2020 024 90365	ELCAP SM MX 35V 4U7
2005	2222 591 16641	CER2 1206 X7R 63V 100N PM10 R
2007	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2008	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2009	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2011	2038 035 00309	ELCAP 470U/25V/SC TYPE
2012	2038 035 00309	ELCAP 470U/25V/SC TYPE
2015	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2016	2038 034 24221	ELCAP VX 25V S 220U PM20 B
2017	2238 580 16627	SMD0805X7R 0.01U 50V +-10
2018	2038 034 73479	ELCAP S 16V 47UF PM20 2E B
2255	2222 861 12101	MLCC 0805 NPO 100P J 4B 9
2342	2222 780 19763	CMC 0805 Y5V 1U M 16V
2343	2020 024 90163	ELCAP SM WX 16V 10U
2344	2222 861 12229	MLCC 0805 NP0 22P J 50V 4B 9 R
2345	2222 861 12229	MLCC 0805 NP0 22P J 50V 4B 9 R
2361	2222 780 19763	CMC 0805 Y5V 1U M 16V
2363	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2366	2238 580 16614	MLCC 0805 X7R 1N K 4B 9
2367	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2368	2238 580 16614	MLCC 0805 X7R 1N K 4B 9
2369	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2374	2238 580 16614	MLCC 0805 X7R 1N K 4B 9
2375	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2378	2238 580 16614	MLCC 0805 X7R 1N K 4B 9
2379	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2380	2238 580 16614	MLCC 0805 X7R 1N K 4B 9
2381	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2411	2222 780 19763	CMC 0805 Y5V 1U M 16V
2412	2222 780 19763	CMC 0805 Y5V 1U M 16V
2504	2222 780 19763	CMC 0805 Y5V 1U M 16V
2506	2020 024 90163	ELCAP SM WX 16V 10U
2511	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2512	2238 580 16622	CAP SMD 0805 3N9F X7R
2513	2238 580 15644	CMC CAP 0805 X7R 39N K 50V T
2514	2222 861 12159	smd 0805 npo 15p 50v j
2515	2238 861 15478	SMD 0805 NPO 4P7 50V 0.25P
2516	2238 910 16645	CAP 47NF SMD 0805 X7R
2517	2238 861 15478	SMD 0805 NPO 4P7 50V 0.25P
2518	2238 910 16645	CAP 47NF SMD 0805 X7R
2519	2238 861 15478	SMD 0805 NPO 4P7 50V 0.25P
2520	2238 910 16645	CAP 47NF SMD 0805 X7R
2521	2020 024 90163	ELCAP SM WX 16V 10U
2561	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2562	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2563	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2564	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2565	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2566	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2567	2020 024 90163	ELCAP SM WX 16V 10U
2569	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2570	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2571	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2572	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2574	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2575	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2578	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2579	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2580	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2581	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2582	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2583	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2584	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2585	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2586	2020 024 90163	ELCAP SM WX 16V 10U
2587	2020 024 90163	ELCAP SM WX 16V 10U
2701	2222 861 12109	SMD0805NPO 10P 50V +/-5%
2702	2020 024 90163	ELCAP SM WX 16V 10U
2703	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2704	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2705	2222 861 12109	SMD0805NPO 10P 50V +/-5%
2706	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2708	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2710	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2711	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2712	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2713	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2714	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2716	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2717	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2718	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2719	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2721	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2722	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2723	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2724	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2725	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2728	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2729	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2730	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2801	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2802	2222 861 12101	MLCC 0805 NPO 100P J 4B 9
2803	2238 861 15221	CAP 220PF 0805 SMD
2805	2238 861 15221	CAP 220PF 0805 SMD
2806	2222 861 12101	MLCC 0805 NPO 100P J 4B 9
2807	2222 861 12101	MLCC 0805 NPO 100P J 4B 9
2810	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2811	2238 580 16627	SMD0805X7R 0.01U 50V +-10
2820	2238 910 16649	CER2 0805 X7R 25V 100N PM10 R
2821	2238 580 16627	SMD0805X7R 0.01U 50V +-10
3001	2322 730 61102	RST SMC 0805 RC11 1K PM5 T
3002	2322 730 61472	RST SM 0805 RC11 4K7 PM5 R
3003	2322 730 61101	RST SM 0805 RC11 100R PM5 R
3004	2322 730 61101	RST SM 0805 RC11 100R PM5 R
3005	2322 730 61103	RES 10K RC-11 SMD 0805 T
3028	2322 730 61223	RES 22K 0805 SMD
3030	2322 730 61103	RES 10K RC-11 SMD 0805 T
3031	2322 730 61102	RST SMC 0805 RC11 1K PM5 T
3200	2322 730 91002	RST SM 0805 JUMP. MAX 0R05 T
3201	2322 730 91002	RST SM 0805 JUMP. MAX 0R05 T
3301	2322 730 61101	RST SM 0805 RC11 100R PM5 R

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ITEM	CODE	NUMBER	DESCRIPT
3302	2322 730 61103		RES 10K RC-11 SMD 0805 T
3303	2322 730 61101		RST SM 0805 RC11 100R PM5 R
3304	2322 730 61101		RST SM 0805 RC11 100R PM5 R
3305	2322 730 61102		RST SMC 0805 RC11 1K PM5 T
3306	2322 730 61102		RST SMC 0805 RC11 1K PM5 T
3338	2322 730 61472		RST SM 0805 RC11 4K7 PM5 R
3341	2322 730 61103		RES 10K RC-11 SMD 0805 T
3344	2350 035 10472		ARV 241 4K7 5%
3346	2322 730 61101		RST SM 0805 RC11 100R PM5 R
3347	2350 035 10472		ARV 241 4K7 5%
3349	2322 730 91002		RST SM 0805 JUMP. MAX 0R05 T
3361	2350 035 10222		ARV 241 2K2 5%
3362	2350 035 10101		RES 100R/ARV241
3364	2322 730 61101		RST SM 0805 RC11 100R PM5 R
3365	2322 730 61101		RST SM 0805 RC11 100R PM5 R
3367	2350 035 10472		ARV 241 4K7 5%
3368	2322 730 61221		RES 220R 0805 SMD RC-11 T
3369	2322 730 61221		RES 220R 0805 SMD RC-11 T
3370	2322 730 61101		RST SM 0805 RC11 100R PM5 R
3411	2350 035 10103		RES 10K/ARV241
3412	2350 035 10101		RES 100R/ARV241
3415	2322 730 61472		RST SM 0805 RC11 4K7 PM5 R
3416	2350 035 10101		RES 100R/ARV241
3501	2322 730 61471		RST SM 0805 RC11 470R PM5 R
3510	2322 730 61102		RST SMC 0805 RC11 1K PM5 T
3511	2322 730 61151		RST SM 0805 RC11 150R PM5 R
3512	2322 730 61151		RST SM 0805 RC11 150R PM5 R
3513	2322 730 61103		RES 10K RC-11 SMD 0805 T
3514	2322 730 61332		RES 3K3 0805 SMD
3515	2322 730 61759		RST SM 0805 RC11 75R PM5 T
3516	2322 730 61101		RST SM 0805 RC11 100R PM5 R
3517	2322 730 61759		RST SM 0805 RC11 75R PM5 T
3518	2322 730 61101		RST SM 0805 RC11 100R PM5 R
3519	2322 730 61759		RST SM 0805 RC11 75R PM5 T
3520	2322 730 61101		RST SM 0805 RC11 100R PM5 R
3521	2322 730 61334		RST SM 0805 RC11 330K PM5 R
3522	2322 730 61104		RES 100K RC-11 SMD 0805 T
3523	2322 730 61153		RST SM 0805 RC11 15K PM5 R
3551	2322 730 61229		RST SM 0805 RC11 22R PM5 R
3552	2322 730 61689		RES 68R RC-11 SMD 0805 T
3555	2350 035 10479		ARV241 47R PM5
3556	2350 035 10479		ARV241 47R PM5
3557	2350 035 10479		ARV241 47R PM5
3558	2350 035 10479		ARV241 47R PM5
3559	2350 035 10479		ARV241 47R PM5
3560	2350 035 10479		ARV241 47R PM5
3562	2322 730 61102		RST SMC 0805 RC11 1K PM5 T
3563	2322 730 61102		RST SMC 0805 RC11 1K PM5 T
3567	2322 730 61102		RST SMC 0805 RC11 1K PM5 T
3705	2350 035 10479		ARV241 47R PM5
3707	2350 035 10479		ARV241 47R PM5
3708	2350 035 10479		ARV241 47R PM5
3709	2350 035 10479		ARV241 47R PM5
3710	2350 035 10479		ARV241 47R PM5
3711	2350 035 10479		ARV241 47R PM5
3712	2350 035 10479		ARV241 47R PM5
3713	2350 035 10479		ARV241 47R PM5
3714	2350 035 10479		ARV241 47R PM5
3715	2350 035 10479		ARV241 47R PM5
3716	2350 035 10479		ARV241 47R PM5
3717	2350 035 10479		ARV241 47R PM5
3718	2350 035 10479		ARV241 47R PM5
3719	2322 730 61479		RES 47R 0805 SMD RC-11 T
3720	2350 035 10101		RES 100R/ARV241
3721	2322 730 61101		RST SM 0805 RC11 100R PM5 R
3804	2322 730 61222		RST SM 0805 RC11 2K2 PM5 R
3805	2322 730 61222		RST SM 0805 RC11 2K2 PM5 R
3806	2322 730 61151		RST SM 0805 RC11 150R PM5 R
3807	2322 730 61101		RST SM 0805 RC11 100R PM5 R
3808	2322 730 61101		RST SM 0805 RC11 100R PM5 R
3809	2322 730 61101		RST SM 0805 RC11 100R PM5 R
3810	2322 730 61101		RST SM 0805 RC11 100R PM5 R
3811	2322 730 61103		RES 10K RC-11 SMD 0805 T
3812	2322 730 61103		RES 10K RC-11 SMD 0805 T
3813	2322 730 61151		RST SM 0805 RC11 150R PM5 R
3821	2322 730 61103		RES 10K RC-11 SMD 0805 T
3822	2322 730 61103		RES 10K RC-11 SMD 0805 T
3823	2322 730 61101		RST SM 0805 RC11 100R PM5 R
3843	2322 730 61151		RST SM 0805 RC11 150R PM5 R
3844	2322 730 61479		RES 47R 0805 SMD RC-11 T
3901	2138 116 15102		RST MFLM MF50S A 5K1 PM1 A
3902	2138 116 11503		RST MFLM MF50S A 15K PM1 A
3903	2138 116 12403		RST MFLM MF50S A 24K PM1 A
3904	2138 116 12003		RST MFLM MF50S A 20K PM1 A
3905	2138 116 15603		RST MFLM MF50S A 56K PM1 A
3906	2138 116 11004		RST MFLM MF50S A 100K PM1 A
5001	2422 549 43931		IND FXD LINE FIL 50V 4A R
5002	3138 168 74411		DRUM COIL PSC1716H-151Y2R5
5004	2422 535 94969		3A CHOKE
5342	3138 178 74891		BEAD 1206 100MHZ CB32161
5361	3138 178 74891		BEAD 1206 100MHZ CB32161
5366	3138 178 74891		BEAD 1206 100MHZ CB32161
5367	3138 178 74891		BEAD 1206 100MHZ CB32161
5370	2422 549 44195		BEAD BLM21B221SB
5372	2422 549 44195		BEAD BLM21B221SB
5373	2422 549 44195		BEAD BLM21B221SB
5411	3138 178 74891		BEAD 1206 100MHZ CB32161
5412	3138 178 74891		BEAD 1206 100MHZ CB32161
5501	3138 178 74891		BEAD 1206 100MHZ CB32161
5503	3138 178 74891		BEAD 1206 100MHZ CB32161
5504	3138 178 74891		BEAD 1206 100MHZ CB32161
5702	3138 178 74891		BEAD 1206 100MHZ CB32161
5703	3138 178 74891		BEAD 1206 100MHZ CB32161
5704	3138 178 74891		BEAD 1206 100MHZ CB32161
5705	3138 178 74891		BEAD 1206 100MHZ CB32161
5706	8238 277 05491		FERRITE BEAD 100MHZ 150R SMD
5801	3138 178 74891		BEAD 1206 100MHZ CB32161
5802	3138 178 74891		BEAD 1206 100MHZ CB32161
6001	9333 882 60215		Z.DIODE BZX84C15V SMD T
6002	9333 882 90215		DIODE BZX84C-20V

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ITEM	CODE	NUMBER	DESCRIPT
6003	9322 082	82668	DIODE STP S34 3A40V
6341	9339 139	10115	SMD DIODE BAS32L
6802	9332 153	70215	SMD DIODE BAV99
6803	9332 153	70215	SMD DIODE BAV99
6804	9332 153	70215	SMD DIODE BAV99
6805	9332 153	70215	SMD DIODE BAV99
6806	9332 153	70215	SMD DIODE BAV99
6807	9332 153	70215	SMD DIODE BAV99
6808	9332 153	70215	SMD DIODE BAV99
6811	9339 139	10115	SMD DIODE BAS32L
6812	9339 139	10115	SMD DIODE BAS32L
6901	9322 146	03682	LED L-3WYGW
7001	3198 010	42081	TRANS BC848C (UAW)
7002	3198 010	42081	TRANS BC848C (UAW)
7003	9322 148	03667	IC SI8050S LF1102 5P
7004	3198 010	42081	TRANS BC848C (UAW)
7005	8238 277	05561	REGULATOR L4955V3.3
7006	3198 010	42081	TRANS BC848C (UAW)
7301	9352 606	76112	IC P87C380AER/F 42P
7362	9322 126	62682	IC M24C16-BN6 8P
7411	8238 274	37641	OSD IC MTV130-06
7502	8238 277	04291	LM1117MPX-3.3
7503	8238 277	04281	AD9884AKST-100
7504	3198 010	42081	TRANS BC848C (UAW)
7505	3198 010	42081	TRANS BC848C (UAW)
7701	8238 277	05271	IC gmz2a
7702	9337 144	00657	IC 74HC14D 14P
7802	8238 277	02751	IC ST24LC21/M6-TR
7811	3198 010	42201	TRANS BC858C (UAW)
7812	9322 115	29668	MOSFET SI9433DY
7821	3198 010	42201	TRANS BC858C (UAW)
7822	9322 115	29668	MOSFET SI9433DY

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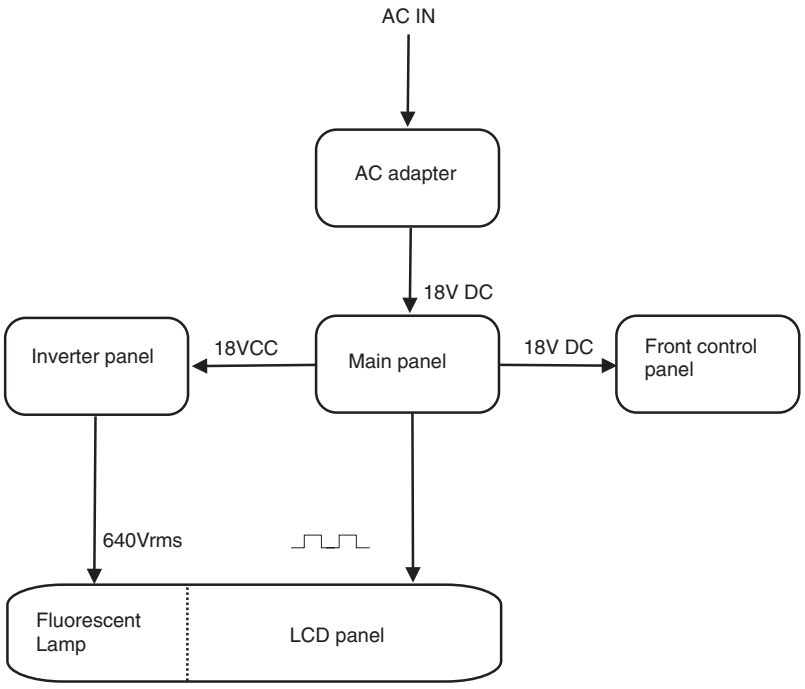
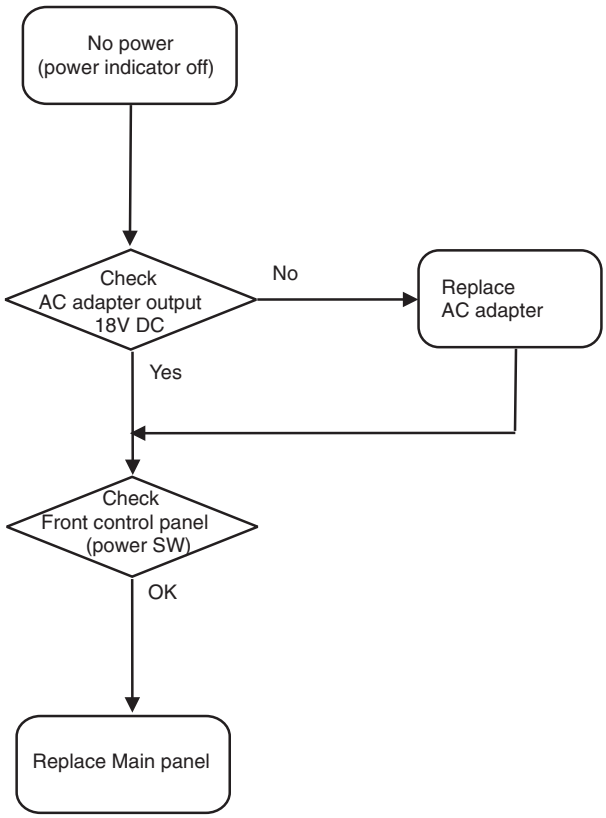
Repair Flow Chart

Block Diagram





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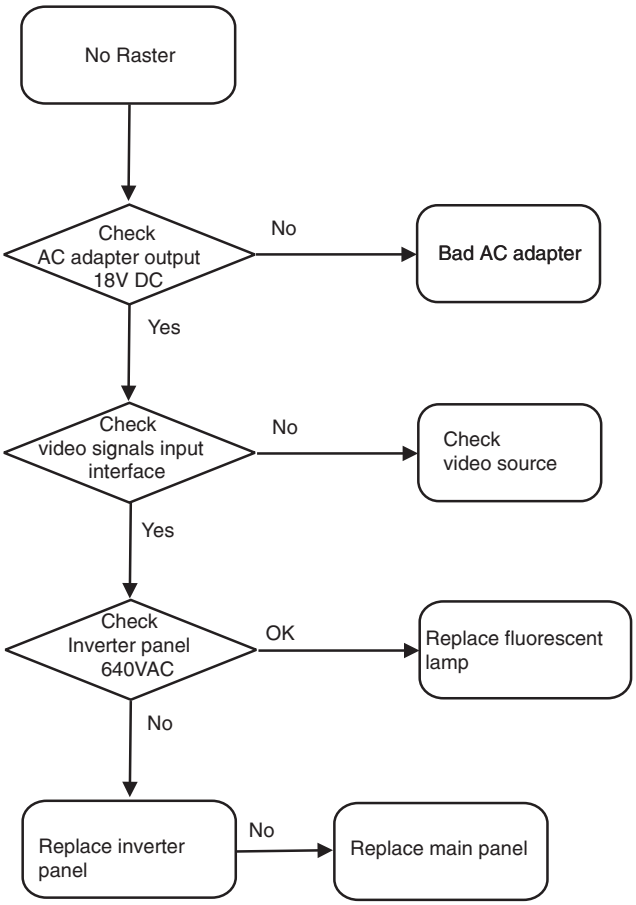
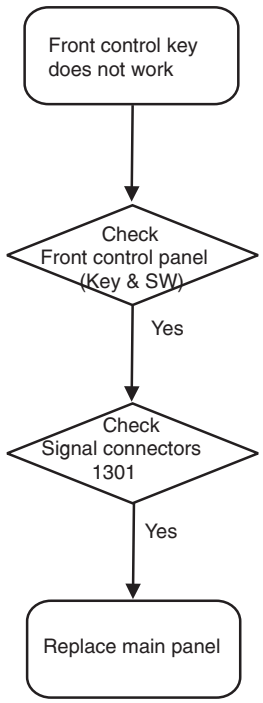
Repair Flow Chart





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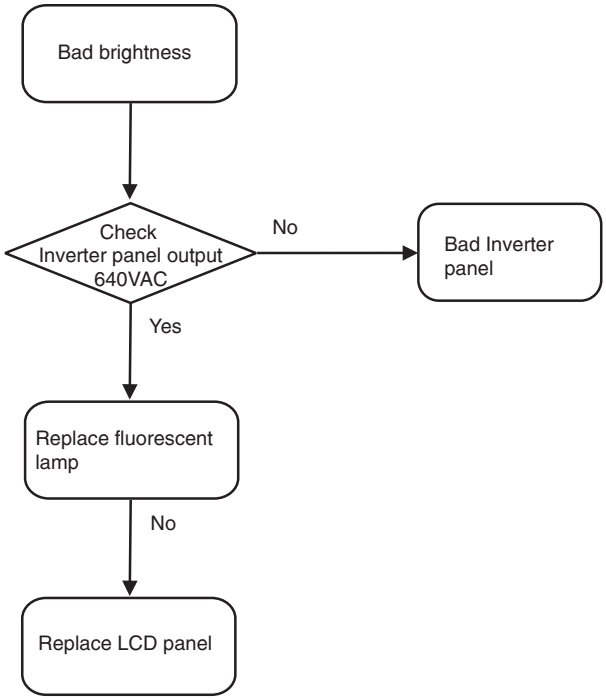
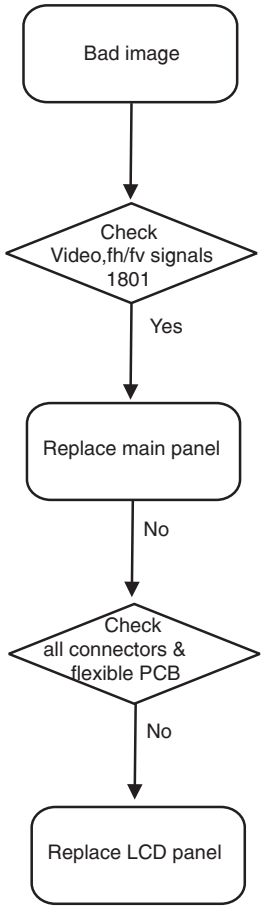
Repair Flow Chart





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PHILIPS

GENERAL PRODUCT SPECIFICATION

. D-SUB ANALOG INTERFACE INPUT

. AUTO PICTURE ADJUSTMENT

. 14 USER MODES WHICH CAN BE RECOVERED TO PRESET MODES

. USER FRIENDLY OSD DISPLAY FOR MODE IDENTIFICATION /ADJUSTMENT

. DDC2B COMMUNICATION CAPABILITY

. MAX. RESOLUTION 1024 x 768 NON-INTERLACED AT 75 HZ

. 14.1" COLOR TFT LCD FLAT PANEL

. EASY TILT & SWIVEL BASE

. FULL RANGE POWER SUPPLY ADAPTER 90 264 VAC

. CE ENVIRONMENTAL POLICY

. ANTI-GLARE TO REDUCE LIGHT REFLECTION

. POWER MANAGEMENT CAPABILITY

. TCO 99 (Option)

. WALL MOUNT KIT (Option)

. PROTECTIVE COVER (option)

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CLASS NO.	14.1"TFT XGA LCD CMTR-POTOMAC	8639 000 10513
00-04-07	TYPE : 140S1M/00 BRAND : PHILIPS	

NAME K.C.CHIEN	SUPERS.	16	590 — 1	10	A4
TY CHECK	DATE 00-04-07	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.			

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PHILIPS

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CLASS NO.

14.1"TFT XGA LCD CMTR-POTOMAC
TYPE : 140S1M/00
BRAND : PHILIPS

8639 000 10513

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PHILIPS

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PHILIPS

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1.0 FOREWORD

This specification describes a 14.1" XGA multiscan color TFT LCD monitor with max. resolution up to 1024x768/75Hz non-interlaced.

2.0 PRODUCT PROFILE

Philips 14.1" VIS TFT LCD flat panel monitor, analog interface, integrated tilt And swivel base.

2.1 LCD

Type NR.	:CHI-MEI panel M141X101
Dimensions	: 14.1"
Pitch (mm)	: 0.279 x 0.279 mm
Color pixel arrangement	: RGB vertical stripes
Display surface	: Antiglare with hard coating 3H
Number of color	: 64 gray levels(6 bits)
Backlight	: CCFL edgelight system
Active area(WxH)	: 285.7x214.3mm
Viewing angle	: CR>=10
	Min. : Vertical y+ 10, y- 30degree, Horizontal 40 degree.
	Typical : Vertical y+ 15, y- 35degree, Horizontal 45 degree.
Contrast ratio	: 200 typical 150 Min.
Luminance of white	: 200 Nits typical 170Nits Min.

2.2 Scanning frequencies

Hor. : 30 - 61KHz Ver. : 56 - 75 Hz

2.3 Video dot rate : <80 MHz

2.4 Power input : 90 - 264 Vac, 50/60 2 Hz

: AC/DC adapter 18 +/- 1V

2.5 Power consumption : Operating <23 W

2.6 Dimensions : 361W x 342.9H x 165D

2.7 Weight : 4.2Kg

2.8 Functions :

15 pins D-sub analog interface.

2.9 Ambient temperature : 0 - 35 C

2.10 Regulatory compliance :

(1) Safety : UL,CSA, SEMKO,

(2) EMI : FCC, CE, C-Tick, BCIQ

(3) Environmental Issue: TCO99

(4) Ergonomic Requirements

: TUV/GS, TUV/ISO9241-3/-8/-7,ISO 13406-2

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PHILIPS

3.0 Electrical characteristics

3.1 Interface signals

Interface Cable:
Length : 1.8 M +/- 50 mm

3.2 Software control functions via OSD/control

Adjustable functions:

MAIN CONTROLS
LANGUAGE
ADJUST POSITION
BRIGHTNESS & CONTRAST
VIDEO NOISE
ADJUST COLOR
OSD SETTINGS
RESET TO FACTORY SETTING
CLOSE MAIN CONTROLS
MOVE SELECTION CONTROLS

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GENERAL PRODUCT SPECIFICATION

LANGUAGE : : ENGLISH , ESPANOL , FRANCAIS , DEUTSCH , ITALIANO JAPANESE

ADJUST POSITION : H-position, V-position.

BRIGHTNESS & CONTRAST: Brightness and contrast adjustment.

VIDEO NOISE : Phase adjustment, Clock adjustment

ADJUST COLOR : Original panel color , 9300K for general use , 6500k for image management, user red, green and blue color adjustable.

OSD SETTINGS : OSD H-position, OSD V-position

RESET TO FACTORY SETTING : Return to factory preset timings and settings.

3.3 Timing requirement
3.3.1 Mode storing capacity

User modes : 14

3.3.2 Available timings
factory pre-set timing, size and centering are according to the reference timing charts.

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MODE NO.	1	* 2	* 3	4
RESOLUTION	640 x 350	720 x 400	640 x 480	640x480
Dot clock(MHz)	25.175	28.321	25.175	30.240
f h	31.469kHz	31.469kHz	31.469kHz	35.0kHz
A (us)	31.78(800 dots)	31.78(900dots)	31.778 (800 dots)	28.571(864 dots)
B (us)	3.813(96 dots)	3.813(108dots)	3.813 (96 dots)	2.116(64 dots)
C (us)	1.907(48 dots)	1.907(54dots)	1.907 (48 dots)	3.175(96 dots)
D (us)	25.42(640 dots)	25.42(720dots)	25.422 (640 dots)	21.164(640 dots)
E (us)	0.636(16 dots)	0.636(18dots)	0.636 (16 dots)	2.116(64 dots)
f v	70Hz(70.09)	70Hz(70.087)	60Hz (59.940)	66.7 HZ(66.667)
O (ms)	14.27(449 lines)	14.27(449 lines)	16.683 (525 lines)	15.000(525 lines)
P (ms)	0.064(2 lines)	0.064(2 lines)	0.064 (2 lines)	0.086(3 lines)
Q (ms)	1.875(59 lines)	1.080(34 lines)	1.049 (33 lines)	1.114(39 lines)
R (ms)	11.12(350 lines)	12.71(400 lines)	15.253 (480 lines)	13.714(480 lines)
S (ms)	1.208(38 lines)	0.413(13 lines)	0.317 (10 lines)	0.086(3 lines)
SYNC. H/V POLARITY	+/-	-/+	- / -	+/+ Or -/-
SEP . SYNC	Y	Y	Y	Y

MODE NO.	5	* 6	7	8
RESOLUTION	640 x 480	640 x 480	800 x 600	800 x 600
Dot clock(MHz)	31.500	31.500	36.000	40.000
f h	37.861kHz	37.500kHz	35.156kHz	37.879kHz
A (us)	26.413(832 dots)	26.667 (840 dots)	28.44 (1024 dots)	26.40 (1056 dots)
B (us)	1.270(40 dots)	2.032 (64 dots)	2.000 (72 dots)	3.200 (128 dots)
C (us)	4.064(128 dots)	3.810 (120 dots)	3.556 (128 dots)	2.200 (88 dots)
D (us)	20.317(640 dots)	20.317 (640 dots)	22.22 (800 dots)	20.00 (800 dots)
E (us)	0.508(16 dots)	0.508 (16 dots)	0.667 (24 dots)	1.000 (40 dots)
f v	72.809Hz	75Hz (75)	56Hz (56.25)	60Hz (60.316)
O (ms)	13.735(520 lines)	13.333 (500 lines)	17.78 (625 lines)	16.58 (628 lines)
P (ms)	0.079(3 lines)	0.080 (3 lines)	0.057 (2 lines)	0.106 (4 lines)
Q (ms)	0.739(28 lines)	0.427 (16 lines)	0.626 (22 lines)	0.607 (23 lines)
R (ms)	12.678(480 lines)	12.80 (480 lines)	17.07 (600 lines)	15.84 (600 lines)
S (ms)	0.023(1 lines)	0.027 (1 line)	0.028 (1 line)	0.026 (1 line)
SYNC. H/V POLARITY	-/-	- / -	+ / +	+ / +
SEP . SYNC	Y	Y	Y	Y

A : H-Total
B : H- Sync width
C : H- Back porch
D : H- Video width
E : H- Front porch

O : V-Total
P : V- Sync width
Q :.V- Back porch
R : V- Video length
S :.V- Front porch

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CLASS NO.

00-04-07

14.1"TFT XGA LCD CMTR-POTOMAC
TYPE : 140S1M/00
BRAND : PHILIPS

8639 000 10513

NAME K.C.CHIEN | SUPERS. | 16 | 590 — 8 | 10 | A4

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MODE NO.	9	* 10	11	* 12
RESOLUTION	800 x 600	800 x 600	832 x 624	1024 x 768
Dot clock(MHz)	50.000	49.500	57.280	65.000
f h	48.077kHz	46.875kHz	49.722kHz	48.363kHz
A (us)	20.80 (1040dots)	21.333 (1056dots)	20.11 (1152dots)	20.677(1344 dots)
B (us)	2.400 (120 dots)	1.616 (80 dots)	1.117 (64 dots)	2.092(136 dots)
C (us)	1.280 (64 dots)	3.232 (160 dots)	3.911 (224 dots)	2.462(160 dots)
D (us)	16.00 (800 dots)	16.162 (800 dots)	14.52 (832 dots)	15.754(1024 dots)
E (us)	1.120 (56 dots)	0.323 (16 dots)	0.559 (32 dots)	0.369(24 dots)
f v	72Hz (72.188)	75Hz (75.000)	75Hz (74.546)	60.004Hz
O (ms)	13.85 (666 lines)	13.333 (625lines)	13.41 (667 lines)	16.666(806 lines)
P (ms)	0.125 (6 lines)	0.064 (3 lines)	0.060 (3 lines)	0.124(6 lines)
Q (ms)	0.478 (23 lines)	0.448 (21 lines)	0.784 (39 lines)	0.600(29 lines)
R (ms)	12.48 (600 lines)	12.80 (600lines)	12.55 (624 lines)	15.880(768 lines)
S (ms)	0.770 (37 line)	0.021 (1 line)	0.020 (1 lines)	0.062(3 lines)
SYNC. H/V POLARITY	+ / +	+ / +	- / -	-/-
SEP . SYNC	Y	Y	Y	Y

MODE NO.	13	* 14
RESOLUTION	1024 x 768	1024 x 768
Dot clock(MHz)	75.000	78.750
f h	56.476kHz	60.023kHz
A (us)	17.707(1328 dots)	16.66 (1312dots)
B (us)	1.813(136 dots)	1.219 (96 dots)
C (us)	1.920(144 dots)	2.235 (176 dots)
D (us)	13.653(1024 dots)	13.003 (1024dots)
E (us)	0.320(24 dots)	0.203 (16 dots)
f v	70.069Hz	75Hz (75.029)
O (ms)	14.272(806 lines)	13.328 (800 lines)
P (ms)	0.106(6 lines)	0.050 (3 lines)
Q (ms)	0.513(29 lines)	0.466 (28 lines)
R (ms)	13.599(768 lines)	12.795 (768 lines)
S (ms)	0.053(3 lines)	0.017 (1 line)
SYNC. H/V POLARITY	-/-	+/+
SEP . SYNC	Y	Y

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CLASS NO.

14.1"TFT XGA LCD CMTR-POTOMAC
TYPE : 140S1M/00
BRAND : PHILIPS

8639 000 10513

00-04-07

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3.3.3 Horizontal scanning
Sync polarity : Positive or Negative
Scanning frequency : 30 - 61 KHz

3.3.4 Vertical scanning
Sync polarity : Positive or Negative
Scanning frequency : 56 - 75 Hz

3.4 Power input connection
Power cord length : 1.8 M
Power cord type : 3 leads power cord with protective earth plug.

3.5 Power management
The power consumption and the status indication of the set with power management function are as follows,

STATUS	Horizontal	Vertical	Power Spec	LED
On	Pulse	Pulse	as normal on	Green
Stand-by	No Pulse	Pulse	< 3 W	Amber
Suspend	Pulse	No Pulse	< 3 W	Amber
off	No Pulse	No Pulse	< 3 W	Amber

3.6 Display identification

In accordance with DDC requirement.

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PHILIPS

4.0 Visual characteristics

4.1 Test conditions

Unless otherwise specified, this specification is defined under the following conditions.

(1) Input signal : As defined in 3.3, 1024 x 768 non-interlaced mode (60.023 KHz), signal sources must have 75 ohm output impedance.

(2) Luminance setting : controls to be set to 170 Nits with full screen 100 % duty cycle white signal.

(3) Warm up: more than 30 minutes after power on with signal supplied.

(4) Ambient light: 400 -- 600 lux.

(5) Ambient temperature: 25 2 C

4.2 Resolution

!

Mode	Resolution	H. freq. / V. freq	Standard
1.	640 x 350	31.469Khz/70.087Hz	VGA
2.	720 x 400	31.469Khz/70.087Hz	VGA
3.	640 x 480	31.469Khz/59.940Hz	VGA
4.	640 x 480	35.000Khz/66.667Hz	Macintosl
5.	640 x 480	37.861Khz/72.809Hz	VESA
6.	640 x 480	37.500Khz/75.000Hz	VESA
7.	800 x 600	35.156Khz/56.250Hz	VESA
8.	800 x 600	37.879Khz/60.317Hz	VESA
9.	800 x 600	48.077Khz/72.188Hz	VESA
10.	800 x 600	46.875Khz/75.000Hz	VESA
11.	832 x 624	49.722Khz/74.546Hz	Macintosl
12.	1024 x 768	48.363Khz/60.004Hz	VESA
13.	1024 x 768	56.476Khz/70.069Hz	VESA
14.	1024 x 768	60.023Khz/75.029Hz	VESA

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4.3 Brightness: >170 nits at maximum contrast and Brightness.
(at center of the screen, Fig. 1)

4.4 Image size

4.4.1 Actual display size
285.7x214.3mm

4.5 Brightness uniformity
Set contrast at 100% and turn the brightness to get above 170 nits.
at center of the screen
Apply the Fig 1, it should comply with the following formula:

Maximum luminance of five points (brightness)
< 1.35
Minimum luminance of five points (brightness)

4.6 White color adjustment

There are two factory preset white color 9300K and 6500K.

Apply full white pattern, with brightness in 100 % position
and the contrast control at 50% position.
The 1931 CIE Chromaticity (color triangle) diagram (x,y)
coordinate for the screen center should be:

9300K CIE coordinates	X = 0.281 0.020
	Y = 0.311 0.020
6500K CIE coordinates	X = 0.312 0.020
	Y = 0.338 0.020

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PHILIPS

5.0 Mechanical characteristics

5.1 Controls

Front side : - DC power switch
-OSD function key
- Auto adjust key
Rear side :
-Video signal cable
-DC 18V input plug

5.2 Unit dimension / Weight

Set dimension (incl. pedestal): 361W x 342.9H x 165D

Net weight : 4.2 Kg

5.3 Tilt and swivel base

tilt angle : -5 to + 35
swivel rotation : +/- 45

5.4 Transportation packages

5.4.1 Shipping dimension/Weight
Carton dimension : 495W x 220H x 480D (outer)
Gross weight : 5 Kg

5.4.2 Block unit / Palletization

layers/block	sets/layer	sets/block unit
10	4	40

blocks/container	
20 feet	40 feet
480	960

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6.0 Environmental characteristics
The following sections define the interference and susceptibility condition limits that might occur between external environment and the display device.

6.1 Susceptibility of display to external environment
Operating
- Temperature : 0 to 35 degree C
- Humidity : 80% max
- Altitude : 0-3658m
- Air pressure : 600-1100 mBAR

Storage
- Temperature : -20 to 60 degree C
- Humidity : 95% max (< 40 J)
- Altitude : 0-12192m
- Air pressure : 300-1100 mBAR

Note: recommand at 0 to 35C,Humidity less than 60 %

6.2 Transportation tests
6.3

Standard		Philips UAN-D1400	NSTA
Drop Test	Height	76 cm	76 cm
	Sequence	1 corner 3 faces (-10deg C x 16 hrs)	1 corner 3 edge (roon temp) 6 face
	Test Result	Electrical function ok Mechanical function ok No serious damage on set appearance (room temp./-10 c, humidity 70 %)	
Vibration Test	Sequence	(1) PACKAGING 5-200 Hz , 0.73 G , 30 min. for Each axis	
		(2) OPERATING 10-50-10 Hz , 0.35 mm , 30 min. for Each axis	
	Test Result	Electrical function ok Mechanical function ok No serious damage on set appearance	
Bump Test		For design evaluation only Operating 10 G, 11 msec, 1000 cycles Temperature : 23°C Humidity : 60 % air pressure : 100 kpa (according to DSD draft standard UAN- D636)	

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6.3 Display disturbances from external environment
According to IEC 801-2 for ESD disturbances

6.4 Display disturbances to external environment

6.4.1 EMI
EMI : FCC, ,CE,C-Tick,TCO99,BCIQ

7.0 Reliability

7.1 Mean Time Between Failures
System MTBF (Excluding the LCD panel and CCFL) : 50,000 hrs
CCFL MTBF : 50,000 hrs

8.0 Quality assurance requirements

8.1 Acceptance test
according to MIL-STD-105D Control II level

AQL : 0.65 (major)
2.5 (minor)
(please also refer to annual quality agreement)

9.0 Serviceability
The serviceability of this monitor should fulfill the requirements which are prescribed in UAW-0346 and must be checked with the check list UAT-0361.

Pattern 1: Brightness and Uniformity measure points

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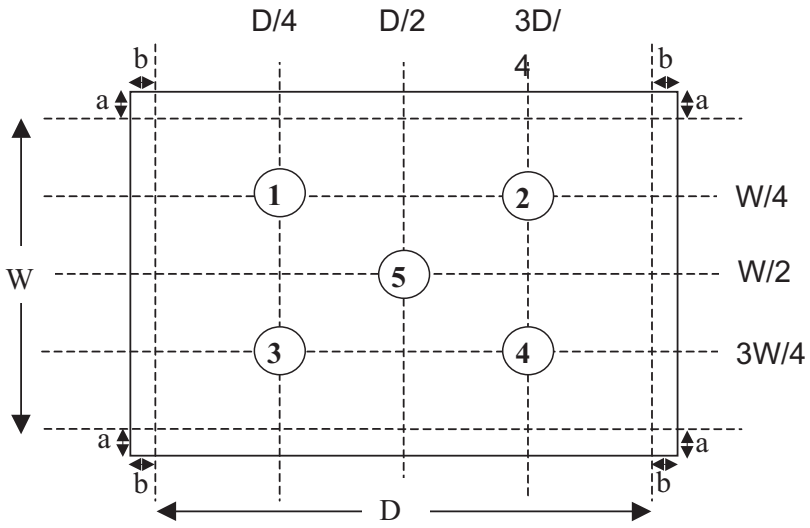
Pattern 1 : Brightness and Uniformity measure points



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CLASS NO.	14.1"TFT XGA LCD CMTR-POTOMAC TYPE : 140S1M/00 BRAND : PHILIPS				8639 000 10513			
00-04-07								
NAME K.C.CHIEN	SUPERS.		16	590 — 16		10		A4
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Parts List

ITEM	PART NUMBER	ITEM NO.	MFRS.	Philips code
C1	25MV100SGX+TS 1uf/25V	NN11514	SANYO	
C3	C2012JF1C474ZT0J0N 0.47uf/16V	NN13143	TDK	
C4	C2012JF1C474ZT0J0N 0.47uf/16V	NN13143	TDK	
C5	C3216JF1C105ZT0H0N 1uf/16V	NN13273	TDK	
C6	C2012X7R1C104KT000N 0.1uf/16V	NN13039	TDK	
C7	C2012X7R1C224KT000N 0.22uf/16V	NN13091	TDK	
	C2012X7R1H681KT000A 0.68nf/50V	NN13132		
C8	C2012X7R1H681JT000A	NN13226	TDK	
C9	C2012X7R1C224KT000N 0.22uf/16V	NN13091	TDK	
	C2012X7R1H104KT000N 0.1uf/50V	NN13036		
C10	C2012X7R1E104KT000N	NN13140	TDK	
C11	C2012X7R1H222KT000A 0.0022uf/50V	NN13025	TDK	
C12	BF014E0154JDC 0.15uf/100V	NN12265	THOMSON-CSF	
C13	C2012X7R1C224KT000N 0.22uf/16v	NN13091	TDK	
C14	C3216JF1C475ZT000N 4.7uf/16V	NN13218	TDK	
C15	CC45SL3FD270JYAN 0.27pf/3KV	NN10095	TDK	
C16	C2012X7R1C104KT000N 0.1uf/16V	NN13039	TDK	
C17	C3216JF1C225ZT0K0N 2.2uf/16V	NN13247	TDK	
C18	C2012X7R1H222KT000A 0.0022uf/50V	NN13025	TDK	
C19	C2012X7R1C224KT000N 0.22uf/16V	NN13091	TDK	
C20	BF014E0154JDC 0.15uf/100V	NN12265	THOMSON-CSF	
C21	C3216JF1C475ZT000N 4.7uf/16V	NN13218	TDK	
C22	CC45SL3FD270JYAN 0.27pf/3kV	NN10095	TDK	
C23	C2012JF1C474KT000N 0.47uf/16V	NN13143	TDK	
C24	C2012JF1C225ZT000N 2.2uf/16V	NN13144	TDK	
C25	C2012JF1C225ZT000N 2.2uf/16C	NN13144	TDK	
C26	C2012X7R1C104KT000N 0.1uf/16V	NN13039	TDK	
C27	C2012X7R1C104KT000N 0.1uf/16V	NN13039	TDK	
W1	AWG 28		UL: E162690	
	MA110-TX(TW)	NN25329	MATSUSHITA	
CR1	MA111-TX(TW)	NN25330	MATSUSHITA	
	SFPB-54	NN25398	SANKEN	
CR2	EC10QS04-TE12L	NN25256	INTECH	
	MA110-TX(TW)	NN25329	MATSUSHITA	
CR3	MA111-TX(TW)	NN25330	MATSUSHITA	
	RD13SB2-T1(T2)B	NN25416	NEC	
CR4	UDZTE01713B	NN25418	ROHM	
	MA110-TX(TW)	NN25329	MATSUSHITA	
CR5	MA111-TX(TW)	NN25330	MATSUSHITA	
	1SS226(TE85L)	NN25257	TOSHIBA	
CR6	MA157-TX	NN25315	MATSUSHITA	
	MA110-TX(TW)	NN25329	MATSUSHITA	
CR7	MA111-TX(TW)	NN25330	MATSUSHITA	
	SFPB-54V	NN25398	SANKEN	
CR8	EC10QS04-TE12L	NN25256	INTECH	
	MA110-TX(TW)	NN25329	MATSUSHITA	
CR9	MA111-TX(TW)	NN25330	MATSUSHITA	
	RD13SB2-T1(T2)B	NN25416	NEC	
CR10	UDZTE01713B	NN25418	ROHM	
	1SS226(TE85L)	NN25257	TOSHIBA	
CR12	MA157-TX	NN25315	MATSUSHITA	
CR13	RLZ5245B	NN25567	ROHM	
CR14	RLZ5245B	NN25567	ROHM	
F1	R4291.75	NN52110	UL: E10480(N)	
	1.75A,63Vdc		CSA: LR29862	
	TL1451CNS	NN35149	TI	
IC1	TL1451A	NN35111	TI	
PB1	3EA02424T-02	NN2031402	UL: 188815(S)	
	2SD1819A-R-TX(TW)	NN30147	MATSUSHITA	
Q1	2SC4116Y	NN30185	TOSHIBA	
	2SC4081 T106	NN30243	ROHM	
Q2	DTA114EU-T106(T107)	NN30149	ROHM	
	2SD1819A-R-TX(TW)	NN30147	MATSUSHITA	
Q3	2SC4116Y	NN30185	TOSHIBA	
	2SC4081 T106	NN30243	ROHM	
	2SB1203-S/T-TL(TR)	NN30145	SANYO	
Q4	2SB1204S/T	NN30184	SANYO	
	2SB1205S	NN30258	SANYO	
	FCX619	NN30278	ZETEX	
Q5	2SD2403GY-T1(T2)	NN30148	NEC	
	FCX619	NN30278	ZETEX	
Q6	2SD2403GY-T1(T2)	NN30148	NEC	
	2SD1819A-R-TX(TW)	NN30147	MATSUSHITA	

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Q7	2SC4116Y	NN30185	TOSHIBA
	2SC4081 T106	NN30243	ROHM
	2SB1203-S/T-TL(TR)	NN30145	SANYO
Q8	2SB1204S/T	NN30184	SANYO
	2SB1205S	NN30258	SANYO
	FCX619	NN30278	ZETEX
Q9	2SD2403GY-T1(T2)	NN30148	NEC
	FCX619	NN30278	ZETEX
Q10	2SD2403GY-T1(T2)	NN30148	NEC
	2SD1819A-R-TX(TW)	NN30147	MATSUSHITA
Q12	2SC4116Y	NN30185	TOSHIBA
	2SC4081 T106	NN30243	ROHM
	ZXM61N02F	NN30298	ZETEX
Q13	2SK2158-T1B	NN30269	TOSHIBA
	RC0805JRF1M	NN06939	YAGEO
R1	RMC10P105J	NN06412	KAMAYA
	RC0805JRF390K	NN06899	YAGEO
R2	RMC10P394J	NN06838	KAMAYA
	RC0805JRF220K	NN06921	YAGEO
R3	RMC10P224J	NN06386	KAMAYA
	RC0805JRF180K	NN06922	YAGEO
R4	RMC10P184J	NN06245	KAMAYA
	RC0805JRF180K	NN06922	YAGEO
R5	RMC10P184J	NN06245	KAMAYA
R6	N.A.		
	RC0805JRF6.8K	NN06747	YAGEO
R7	RMC10P682J	NN06345	KAMAYA
	RC0805JRF220K	NN06921	YAGEO
R8	RMC10P224J	NN06386	KAMAYA
	RC1206JRF820R	NN06767	YAGEO
R9	RMC14P821J	NN06216	KAMAYA
	RC0805JRF100K	NN06733	YAGEO
R10	RMC10P104J	NN06383	KAMAYA
	RC0805FRF30K	NN06746	YAGEO
R11	RMC10P3002F	NN06429	KAMAYA
	RC1206JRF2.2K	NN06750	YAGEO
R12	RMC14P222J	NN06150	KAMAYA
	RC1206JRF2.2K	NN06750	YAGEO
R13	RMC14P222J	NN06150	KAMAYA
	RC0805FRF33K	NN06827	YAGEO
R14	RMC10P3302F	NN06430	KAMAYA
	RC0805FRF1.8K	NN06869	YAGEO
R15	RMC10P1801F	NN06401	KAMAYA
	RC0805FRF1K	NN06802	YAGEO
R16	RMC10P1001F	NN06255	KAMAYA
	RC1206JRF820R	NN06767	YAGEO
R17	RMC14P821J	NN06216	KAMAYA
	RC0805JRF100K	NN06733	YAGEO
R18	RMC10P104J	NN06383	KAMAYA
	RC0805FRF30K	NN06746	YAGEO
R19	RMC10P3002F	NN06429	KAMAYA
	RC1206JRF2.2K	NN06750	YAGEO
R20	RMC14P222J	NN06150	KAMAYA
	RC1206JRF2.2K	NN06750	YAGEO
R21	RMC14P222J	NN06150	KAMAYA
	RC0805FRF33K	NN06827	YAGEO
R22	RMC10P3302F	NN06430	KAMAYA
	RC0805FRF1.8K	NN06869	YAGEO
R23	RMC10P1801F	NN06401	KAMAYA
	RC0805FRF1k	NN06802	YAGEO
R24	RMC10P1001F	NN06255	KAMAYA
	RC0805FRF220K	NN06802	YAGEO
R25	RMC10P2203F	NN06255	KAMAYA
	RC0805JRF820K	NN06902	YAGEO
R26	RMC10P824J	NN06663	KAMAYA
	RC0805JRF270K	NN06901	YAGEO
R27	RMC10P274J	NN06508	KAMAYA
	RC0805JRF47K	NN06760	YAGEO
R28	RMC10P473J	NN06253	KAMAYA
	RC0805JRF15K	NN06779	YAGEO
R29	RMC10P153J	NN06332	KAMAYA
L1	PSC1215-221KR50	NN42607	TDK
L2	PSC1215-221KR50	NN42607	TDK
T1	NIA15/20EM-T16H004	NP80028	TDK
T2	NIA15/20EM-T16H004	NP80028	TDK
JJ1	4JJ0ZD155	NN98988	CHUNG WEI
JJ2	4JJ0ZD155	NN98988	CHUNG WEI

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TELEVISION/MONITOR SAFETY GUIDELINES FOR THE PROFESSIONAL SERVICE TECHNICIAN

Safety Checks

After the original swevice problem has been corrected,a complete safety check
should be made. Be sure to check over the entire set, not just the areas where you have worked. Some previous servicer may have left an unsafe condition,which could be unknowingly passed on to your customer. Be sure to check all of the following:

Fire and Shock H azard

1. Be sure all components are positioned in such a way as to avoid the possibility of adjacent component shorts. This is especially important on those chassis which are transported to and feom the service shop.
2. Never release a repaired unit unless all protective devices such as insulators, barries, covers, strain reliefs, and other hardware have been installed in accordance with the original design.
3. Soldering and wiring must be inspected to locate possible cold solder joints,solder splashes,sharp solder points, frayed leads, pinched leads, or damaged insulation (including the ac cord).Be certain to remove loose solder balls and all other loose foreign particles.
4. Check across-the-line components and other components for physical evidence of damage or deteriortion and replace if necessary. Follow original layout,lead length, and dress.
5. No lead or component should touch a receiving tube or a resistor rated at 1 watt or more. Lead tension around protruding metal surfaces or edges must be avoided.
6. Critical components having special safety characteristics are identified with ans bythe Ref. No. in the parts list and enclosed within a broken line * (where seceral criticalcomponents are grouped in one area) along with the safety symbols on the schematic diagrams and/or exploded views.
7. When servicing any unit, always use a seoparate isolation transformer for the chassis Failure to use a separate isolation transformer may exopose you to possible shock hazard, and may cause damage to servicing instruments.
8. Many electronic products use a polarized ac line cord (one wide pin on the plug.) Defeating this safety feature may create a potential hazard to the service and the user. Extension cords which do not incorporate the polarizing feature should never be used.
9. After reassembly of the unit, always perform an leakage test or resistance test from the line cord to all exposed metal parts of the cabinet. Also check all metal control shafts(with knobs removed), antenna terminals, handles, screws, etc. to be sure the unit may be safety operted without danger of electrical shock.

* Broken line

Implosion

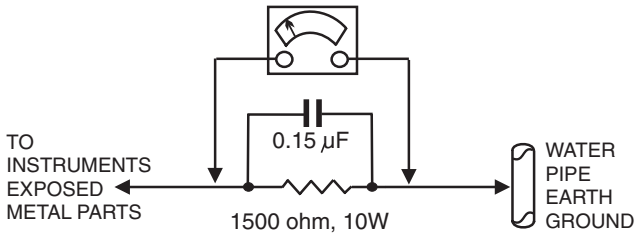
1. All picture tubes used in current model receivers are equipped with an intergral implosion system. Care should always be used, and safety glassesworn,whenever handling any picture tube. Avoid scratching or other rwise damaging the picture tube during installation.
2. Use only replacement tubes specified by the manufacturer.

X-radiation

1. Be sure procedures and instructions to all your service personnel cover the subject of X-radiation. Potential sources of X-rays in TV receivers are the picture tube and the high voltage circuits. The basic precaution which must be exercised is to keep the high voltage at the factory recommended level.
2. To avoid possible exposure to X-radiation and electrical shock, only the manufacturer's specified anode connectors must be used.
3. It is essential that the service technician has an accurate HV meter available at all times. The calibration of this meter should be checked periodically against a reference standard.
4. When the HV circuitry isoperating properly there is no possibility of an x-radiation problem. High voltage should always be kept at the anufacture,s rated value-no higher - for optimum performance. Every time a color set is serviced, the brightness should be run up and down while monitoring the HV with a meter to be certain that the HV is requlated correctlv and does not exceed the specified value. We suggest that you and your technicians review test procedures so that HV requation are always checked as a standard servicing procedure, and the reason for this prudent routine is cleary understood by everyone. It is important to use an accurate and reliable HV meter. It is recommended that the HV recorded on each customer's invoice, which will demonstrate a proper concern for the customer's safety.
5. When troubleshooting and making test measurements in a receiver with a problem of excessive high voltage, reduce the line voltage by means of a Variac to bring the HV into acceptable limits while troubleshooting. Do not operate the chassis longer than necessary to locate the cause of the excessive HV.
6. New picture tubes are specifically designed to withstand higher operathng voltages without creating undesirable X-radiation. It is strongly recommended that any shop test fixture which is to be used with the new higher voltage chassis be equipped with one of the new type tubes designed for this service.Addition of a permanently connected HV meter to the shop test fixture is advisable. The CRT types used in these new sets should never be replaced with any other types,as this may result in excessive X-radiation.
7. It is essential to use the specified picture tube to avoid a possible X-diation problem.
8. Most TV receivers contain some type of emergency "Hold Down" circuit to pervent HV from rising to excessive levels in the presence of a failure mode. These various circuits should be understood by all technicians servicing them, especially since many hold down circuits are inoperative as long as the receiver performs normally.

Leakage Current Cold Check

1. Unplug the ac line cord and connect a jumper between the two prongs of the plug.
2. Turn on the power switch.
3. Measure the resistance value between the jumpered ac plug and all exposed cabinet parts of the receiver, such as screw heads, antennas, and control shafts.When the exposed metallic part has a return path to the chassis, the reading should be between 1 megohm and 5.2 megohms. When the exposed metal does not have a return path to thr chassis, the reading must be infinity.Remove the jumper from the ac line cord.



Leakage Current Hot Check

1. Do not use an isolation transformer for this test. Plug the completely reassembled receiver directly into the ac outlet.
2. Connect a 1.5k, 10w resistor paralleled by a 0.15uf. capacitor between each exposed metallic cabinet part and a good earth ground such as a water pipe, as shown above.
3. Use an ac voltmeter with at least 5000 ohmsy volt sensitivity to measure the potential across the resistor.
4. The potential at any point should not exceed 0.75 volts. A leakage current tester may be used to make this test; leakage current must not exceed 0.5 milliamps. If a measutement is outside of the specified limits, there is a possibility of shock hazard. The receiver should be repaired and rechecked before retutning it to the customer.
5. Repeat the above procedure with the ac plug reversed.(Note: An ac adapter is necessary when a polarized plug is used. Do not defeat the polarizing feature of the plug.)

Picture Tube Replacement

The primary source of X-radiation in this television receiver is the picture tube.The picturetube utilized in this chassis is specially constructed to limit X-radiation emissions. For continued X-radiation protection, the replacement tube must be the same type as the original, including suffix letter,or a Philips approved tupe.

Parts Replacement

Many electrical and mechanical parts in Philips television sets have special safety related charcteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. The use of a substitute part which does not have the same safety characteristics as the Philips recommended replacement part shown in this service manual may create shock, fire, or other hazards

WSRNING : Before removing the CRT anode cap, turn the unit **OFF** and short the HIGH VOLTAGE to the CRT DAG ground.
SERVICE NOTE : The CRT DAG is not at chassis ground.

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